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PROCESSOR

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Problems With Network Or Power Cables?

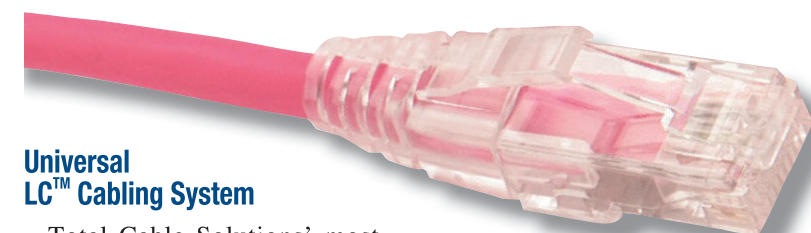
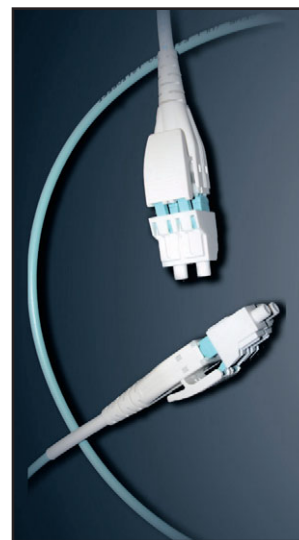
Total Cable Solutions' Products Ease Data Center Cabling Headaches

TOTAL CABLE SOLUTIONS IS A PROBLEM SOLVER. The company has many cabling products, including fiber patch cables, trunk cables, patch panels, power cables, and copper SAS and SATA cables, all designed to help you overcome cabling challenges. TCS' ultimate goal is to meet the speed and performance needs of its customers by building quality, customizable products that are flexible enough to fit into almost any piece of equipment.

From the company's Universal LC™ cabling system, color power cables, and ProFIT Ultra™ copper cabling to its suite of additional data center services, Total Cable Solutions is a one-stop shop for your cable-related needs.

many as 72 fibers for all your data center's high-density needs, and the included pulling eye makes cable management through floors, trays, and other tight spaces much easier. Universal Patch™ supports a variety of plates and is modular for compatibility with almost any 1U system.

Each part of the Universal LC™ cabling system is customizable to fit your specific equipment and rack arrangement. Plus, as with all Total Cable Solutions products, the Universal LC™ cabling system is 100% tested to ensure you get the highest-quality products that are guaranteed to work. And because of the performance and flexibility of the system and its components, you won't have to worry about making large-scale cabling upgrades in the future.



Universal LC™ Cabling System

Color Power Cables, SureFIT™, ProFIT Ultra™ & More

Total Cable Solutions' most prominent product line is the Universal LC™ cabling system, which consists of the Universal LC™ cable, Universal LC™ Trunk Cable, and the Universal Patch™. The Universal LC™ cable features adjustable pitch from standard LC (6.25 pitch) to mini (5.25 pitch), which overcomes the issue of manufacturers using a variety of pitches in their equipment. Universal LC™ cables are durable, with a 2mm, high-density jacket and bend-insensitive fiber. The cables also have rapid-release latches for quick swapping.

The Universal LC™ Trunk Cable features a Micro Core Trunk that can hold as

Most data centers struggle with being able to keep track of the

cables running from multiple power grids. It's crucial to have redundant or backup power in place to make sure servers and other equipment stay up and running, but it's difficult to sift through the tangled mess of black power cords inside a rack.

To help solve this problem, Total Cable Solutions designed 100% UL approved Color Power Cables, letting users replace their standard black power cables with, for instance, red and blue ones. With the cables implemented, you can trace the connection from your PDU up through the rack and


make sure that each piece of equipment has access to both power grids. Color Power Cables help you avoid connecting a mission-critical piece of equipment to one lone power source, which can take your server out of commission if your primary power supply goes down.

In addition to solving the cable management problem, Total Cable Solutions also makes it easier to securely connect power cables to the PDU. One TCS customer recently complained that 2 to 3% of its power cables were accidentally unplugged on a daily basis. The TCS SureFIT™ Locking Sleeve solves this problem and can be added to the end of a C14 or C20 power cable, for example, to lock it into place. The SureFIT™ creates a strong connection and prevents cables from simply falling out or being dislodged due to someone tripping over them. And while many other companies develop proprietary solutions,

the SureFIT™ will work with almost any standard power cable.

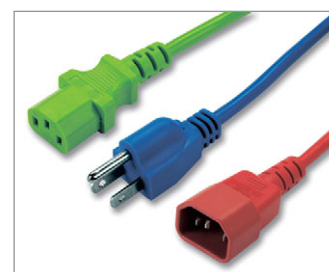
Total Cable Solutions also offers Copper ProFIT Ultra™ cables, which are a part of the company's high-end Ethernet cable line. The cable itself is available in both Cat 6 and Cat 5e models and sports a no-kink design for quick installation. The connector can be easily released for quick cable swaps, and its low profile supports virtually any panel or switch. TCS can even cut the Copper ProFIT Ultra™ to any specified length, so you don't have to worry about making room for extra cable in or around the rack.

Data Center Services

In addition to its wide array of cabling products, Total Cable Solutions offers a variety of data center services, including configuration advice and recommendations such as the ability to help you through the process of designing, installing, and testing your TCS cabling system. With fast, flexible, and customizable cabling solutions, built-in cable management and color-coding features, and TCS' expertise to help along the way, you can outfit your data center with high-quality cables that will improve performance and stand the test of time. 

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The SureFIT™ Locking Sleeve creates a strong connection and prevents power cables from being accidentally dislodged. And SureFIT™ will work with almost any standard power cable.



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FEATURED PRODUCT

A Comprehensive Metric For IT Energy Efficiency

Power Assure PAR⁴ Helps Uncover Hidden Capacity

POWER ASSURE’S PAR⁴ TECHNOLOGY does something every enterprise should find beneficial: provide accurate server energy consumption data that could lead to extending data center life. PAR⁴ does this by putting a tangible measurement and rating in managers’ hands. They can use this measurement to unearth hidden capacity. Why bother? Because energy costs have never been higher and additional capacity is in high demand.

“Provisioning racks based on the vendor’s nameplate power consumption figures leaves much-needed power untapped,” says Power Assure CTO Clemens Pfeiffer. “By using actual power consumption data through PAR⁴, you can vastly increase your rack capacity, often doubling IT capacity.”

Better Provisioning

Data center managers typically provision servers based on power consumption figures listed on nameplates or provided by vendors, “minus a small percentage, assuming

you never load anything up to more than 80%,” Pfeiffer says. These figures are conservative, as they’re based on fully populated equipment, so they’re nearly always overstated, Pfeiffer says. The result is stranded power. Worse, calculating for higher power consumption means enterprises are apt to overcool data centers. Plus, Pfeiffer says, “data center operators think that they’re running out of power, even when the racks or rooms are half full.”

Managers also typically provision servers using processing capacity that’s expressed in transactions per second. These ratings are important, Pfeiffer says, but energy consumption can differ among equipment with similar performance characteristics and abilities. By selecting the most efficient servers, overall power cost declines and the enterprise saves money, he says.

To this end, Underwriters Laboratories published UL2640, a performance standard based on PAR⁴ testing

methodology. UL2640 gives hardware vendors an easy, universal way to publish accurate power consumption figures by providing equipment makers the PAR⁴ testing regimen as part of certification. With PAR⁴ included, Pfeiffer says, the “UL certification provides a third-party vendor, independent standard for data center managers to assess their IT equipment for energy efficiency for accurate capacity planning, as well as for ongoing hardware refresh programs.” Moreover, managers can use PAR⁴ as a repeatable, consistent measure that hardware vendors are unable to tweak.

Under The Hood

PAR⁴ measures servers under real-life load conditions to derive a measurement (the higher the number, the better the energy efficiency) and rating (Green, Gold, Silver, or Black; Green being best). Measurements are collected through a client with power meters and oscilloscopes to denote power consumption during test cycles. These include power on Spike, boot cycle, and a 100% load benchmark cycles that show power consumption during off, idle, loaded, and peak states of server utilization. The reason for measurements at four states, Pfeiffer says, includes:

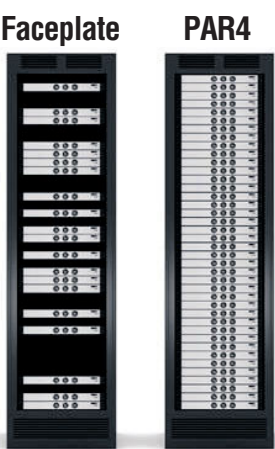
- Off—To know how much power IT equipment uses when off but plugged in.
- Idle—To know the power consumption wasted on IT equipment running but not needed or used.
- Loaded—“This is the power you need to allocate for the equipment, as at any given time the load can go up, and that’s the maximum to plan for during normal operation.”
- Peak—Usually the same as Loaded; in some cases during boot cycle with all fans

engaged, power consumption could rise higher than during normal operation.

“Given Moore’s Law, IT equipment performance doubles every two years,” Pfeiffer says. To simplify server comparisons, a Moore’s Law-based PAR⁴ rating labels comparative efficiency for each year, “past, present, and future,” Pfeiffer says. This lets IT classify equipment based on “its energy efficiency relative to past and future equipment and in turn, they can then provision servers appropriately for compute needs today and plan accordingly into the future. They can also use it for an ROI on early refresh, virtualization, or hardware upgrades in general.”

PAR⁴ Measurement Service

To help with PAR⁴ testing, Power Assure provides a PAR⁴ Measurement Service that gathers measurements on equipment, pinpointing exactly how much power a server uses. “This is measured data, not estimates,” Pfeiffer says. “Power Assure technicians will perform all measurements at your location or our own laboratory using the Underwriters Laboratories tested PAR⁴ methodology and equipment (UL2640 standard).”



By using PAR⁴, this 10kW rack was able to go from having the power maxed out while only half full to being full and still having power left to spare.

POWER ASSURE PAR⁴

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A comprehensive metric for IT energy efficiency tested by Underwriters Laboratories.



FEATURED PRODUCT

Evaporative Cooling Small Enterprises Can Afford

Mestex Aztec Evaporative Cooling Systems Come Ready To Install & Control



IF EVER THERE WERE a cooling system suited for enterprises seeking energy-efficiency savings without sacrificing performance or scalability, it’s the Aztec Evaporative Cooling System from Mestex, a Dallas-based marketing/manufacturing division of Mestek.

Traditionally, small to midsized enterprises have had the fewest options for reducing PUE, OPEX, and CAPEX costs, says Mike Kaler, Mestex president. This includes the evaporative cooling solutions now being commonly deployed as custom systems typically too pricey for smaller deployments.

The Aztec system provides self-contained, rooftop-installable, “bite-sized” units pre-engineered and preconfigured with digital control and monitoring software. Beyond deploying the Aztec on a need-only basis, companies can integrate an Aztec unit into an existing ventilation system (either as a standalone unit or into an air-handling unit). The Aztec works with and without underfloor constructions.

Easy Does It

The Aztec can provide indirect evaporative, indirect/direct evaporative, or evaporative cooling with DX (direct expansion) or ChW

(chilled water) supplemental cooling. It delivers indirect evaporate cooling via a cooling tower and chilled water coil integrated in the unit, an approach that simplifies installation and data center infrastructure requirements. Integrating the cooling tower also enhances data center redundancy, Kaler says, as a cooling tower failure would impact only one Aztec air handler, not other data center units.

“Aztec systems are sometimes referred to as ‘plug and play’ because of their one-piece, pretested configuration, which only requires connection of water and power to become functional at the job site,” Kaler says. “While startup commissioning is required for any HVAC system, the time required for this task is greatly reduced on the Aztec system because it was already set up and tested at the factory, only requiring adjustment in the field for local site conditions.”

The Aztec is also the only evaporative cooling system that ships with a fully tested integrated digital control system, Kaler says. Manufacturing and testing the system in-house enables Mestex to deliver the Aztec ETL-approved and meeting normal local build codes.

Beyond managing the unit’s temperature and pressure control via up to five cold-aisle temperature and one cold-aisle pressure sensors per unit, the digital control system monitors operation and provides service notices, temperature trend recording, and optional GUIs accessible onsite or via Internet access.

“The integral DDC controls can eliminate, or defer, the need for a third-party DCIM package, and the plug-and-play configuration reduces data center infrastructure costs and build-out time,” Kaler says. “You could correctly think of the Aztec system as a containerized evaporative cooling system.”

Excellence In Energy

Companies can configure the Aztec to combine indirect evaporative cooling and “fresh air cooling,” Kaler says, for “the most energy-efficient option available for data center designers who want to achieve a very low PUE.”

One self-contained Aztec unit can support the environmental requirements of up to 18 42U racks operating at maximum levels. As server capacity increases, IT can

simply install additional Aztec units without needing to perform major renovations or component purchases.

“An Aztec system is actually ideal for the data center that isn’t fully populated from the outset,” Kaler says. Because each Aztec system is essentially a self-contained cooling module requiring only a water and power connection, IT can simply add additional Aztec units as the data center grows.

MESTEX AZTEC EVAPORATIVE COOLING SYSTEM

(214) 819-5262
www.mestex.com

Can be configured to provide indirect evaporative, indirect/direct evaporative, or evaporative cooling with DX (direct expansion) or ChW (chilled water) supplemental cooling.



FEATURED PRODUCT

Improved Server Performance & Reliability

Aberdeen LLC's New Stirling 277 Is VMware-Ready & Ready To Be Seamlessly Integrated Within Virtual Infrastructures



ABERDEEN LLC HAS EARNED its reputation within the industry as a manufacturer of affordable, durable, highly scalable, award-winning general-purpose servers and storage servers by gaining the trust of customers and partners.

The new Aberdeen Stirling 277, a 2U VMware-Ready server powered by the Intel® Xeon® Processor E5-2600 series CPUs and built on the Intel Romley platform, is but one of countless examples of how Aberdeen has solidified its reputation.

“The Stirling 277’s VMware-Ready designation means the server can interoperate seamlessly within a virtual infrastructure

and that it has met VMware integration and interoperability standards,” says Mike McArthur, an engineer at Aberdeen. The Stirling 277 is also certified for vSphere Fault Tolerance, helping eliminate the potential of data loss due to disruption.

Better Hardware, Better Abilities

The Stirling 277’s hardware components make it well suited for businesses running 10 to 20 virtual machines on a single ESXi server. The power and efficient performance that the Intel® Xeon® Processor E5-2600 series CPUs provide means the Stirling 277 is also well suited for cloud computing tasks. Aberdeen offers the Intel® Xeon® Processor E5-2600 series in a dual socket configuration. Built on Intel’s 32nm manufacturing technology, the Intel® Xeon® Processor E5-2600 helps companies meet the demands of developing efficient, secure, and high-performing data center infrastructure.

“Among the Stirling 277’s standout features is support to configure more memory (up to 512GB), something that is important for virtualization,” says Niso Levitas, manager of research and development at Aberdeen.

Aberdeen makes acquiring a virtualization platform simple, affordable, and free of fancy terminology by offering two VMware virtualization starter kits. Both kits include two certified Stirling 277 servers providing shared storage and licensing abilities, hardware redundancy, and VMware’s High Availability features. An Essentials Plus kit includes four CPUs, 128GB RAM (expandable to 192GB), and support for up to six CPUs. A Standard Acceleration kit includes four CPUs, 128GB RAM (expandable to 256GB), and support for up to eight CPUs.

Other notable features of the Stirling 277 include dual onboard RJ45 10GbE ports and support for PCI-E 3.0. The 10GbE ports are backward compatible with 1GbE networks and infrastructure, enabling customers to utilize their existing network and switches and then benefit from 10GbE when they are ready. Seven available PCI-E 3.0 slots provide ample slots to add fiber storage, 10GbE, or iSCSI ports. The Stirling 277 can also utilize SAN storage, while supporting up to 32TB storage in the server itself for smaller setups, or to utilize the Virtual Storage Appliance (VSA) features introduced with VMware Vsphere 5.0.

Guaranteed Quality

The Stirling 277 ships with Aberdeen’s industry-leading five-year warranty that guarantees it to be free of material defects during the warranty’s duration and free of workmanship defects during the server’s lifetime.

Before shipping, every Stirling 277 server is put through a comprehensive burn-in process, as well as a thorough Quality Control/Quality Assurance routine. Before and after shipping, Aberdeen has VMware-certified sales and technical staff available to help customers best apply virtualization in their environment to cut their costs and simplify their operations. ■

ABERDEEN STIRLING 277

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RM417 / RM418



RM417 Rear view



RM418 Rear view

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Features: RM418

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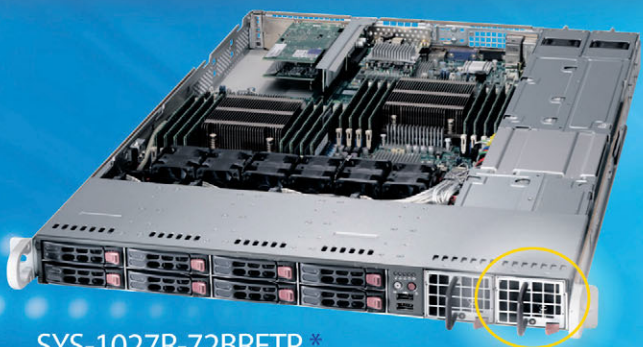
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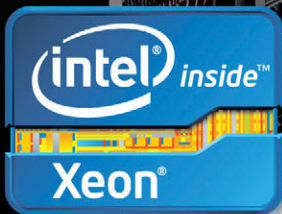


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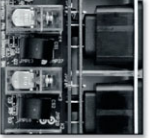
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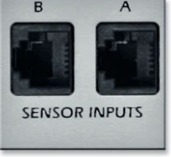
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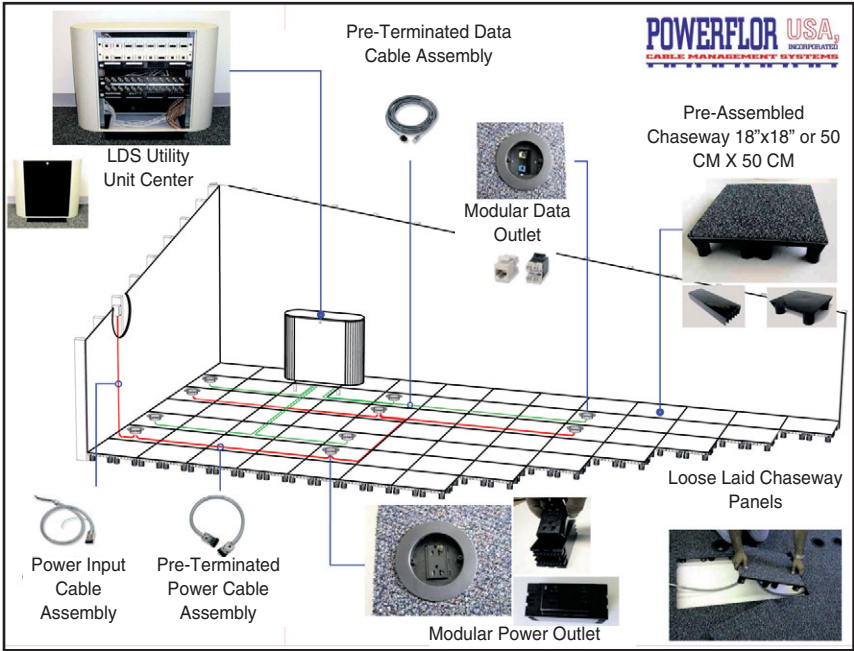


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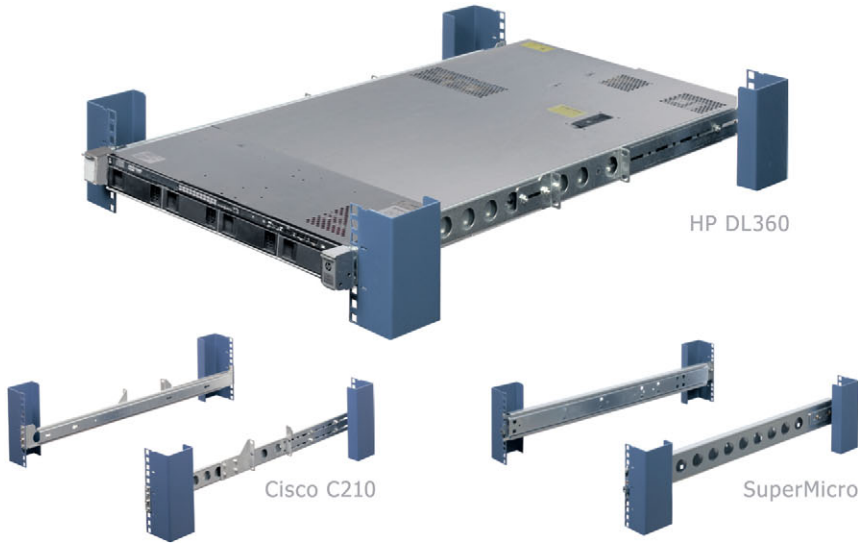


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Study: CIOs Lack Succession Plan

What would happen if your own job had to be filled suddenly? Do you have a plan in place? About 80% of CIOs, or chief information officers, haven't identified a successor, according to a study by Robert Half Technology. The study interviewed more than 1,400 CIOs in U.S. companies with 100 or more employees. "By taking proactive steps to identify and develop future leaders, a manager's departure is a workable issue instead of an imminent crisis," says John Reed, senior executive director of Robert Half Technology.

When it comes to grooming a successor, Robert Half Technology offers the following tips:

- **Start early.** Preparing someone for a leadership role can take time. Starting early helps create a safety net should you face an unforeseen absence or extended leave.
- **Keep an open mind.** Look for candidates who best display the needed skills to take on the role, regardless of their current title.
- **Share the vision.** Be sure to include your prospective successors in strategy discussions. That way they'll better develop planning and leadership skills while getting a broad vision of the company and its goals.
- **Make it ongoing.** Help your protégés progress and meet expectations by providing regular feedback.
- **Take a trial run.** Use a vacation or other time off to let a potential successor assume some of your responsibilities. This will give the employee a chance to gain experience, and you'll be able to see how prepared the employee is.

Hiring Managers Prefer Mature Workers

Hiring managers are three times more likely to hire a mature worker as they are to hire a Millennial, according to a recent survey conducted by Adecco Staffing. Mature workers are viewed as being reliable and professional, according to the hiring professionals surveyed, while Millennial workers are typically more creative and stronger networkers.



Other key findings:

- 72% of hiring managers believe that mature workers need more technological know-how.
- 60% say that Millennials often show a lack of interest in a job during the interview process by not asking questions about the company or position.
- 46% are concerned about Millennial workers' lack of long-term commitment to a company.
- 39% believe mature workers will have difficulty learning or adapting to new technologies.
- 33% say mature workers might be resistant to taking direction from a younger manager.

Researchers Suggest Turning Up Data Center Thermostat

In a new report called "Temperature Management in Data Centers: Why Some (Might) Like it Hot," researchers at the University of Toronto Scarborough suggest that data centers can experience significant cost savings by turning up the heat a degree or two. Research indicates that data centers account for 1% of electricity usage worldwide, and cooling claims a good share of that usage. Data center temperatures are generally kept between 68 and 71.5 degrees, the paper says, using values that "are often chosen based on equipment manufacturers' (conservative) suggestions." The researchers say that allowing the temperature to increase a mere degree can save between 2% and 5% in energy costs.



Report Sheds Light On Data Center Trends

The total number of data centers in the United States continues to decline, but they're growing in size, IDC reports. The trend began in 2009, IDC research shows, triggered by the economic crisis of 2008. "CIOs are increasingly being asked to improve business agility while reducing the cost of doing business through aggressive use of technologies in the data center," says Rick Villars, vice president, data center and cloud research at IDC. Such technologies as server virtualization and data consolidation eliminated the need for smaller data centers as those applications were moved to larger, more centralized data centers, according to IDC. The research group says there are about 2.94 million data centers in the United States today.

Number, Cost Of Cyber Attacks Show Sharp Increase

The number of cyber attacks has more than doubled in the past three years, and the financial impact of those attacks has gone up by about 40%. Those were among the figures released in the third annual "Cost Of Cyber Crime Study" conducted by Ponemon Institute. This year, the average cost of cybercrime was \$8.9 million—up 6% from last year and 38% from 2010. On average, enterprises face about 102 successful cyber attacks each week, up from 72 attacks per week in 2011 and 50 attacks per week in 2010. Malicious code, denial of service, stolen or hijacked devices, and insider attacks are the most costly cybercrimes, according to the study.

■ Mobile Roaming Revenues Increasing Dramatically

Thanks in part to a booming travel industry (especially in Asia) as economic recovery continues, as well as the continually growing use of mobile devices, mobile roaming usage is increasing significantly. According to the new “Mobile Roaming” report from Juniper Research, carrier revenues from mobile roaming will reach \$80 billion by 2017 compared to about \$46 billion this year. Juniper Research also points to recent consumer-protection regulations in Europe and other markets as prompting a reduction in roaming rates; this might play a role in increased mobile data usage.

■ Wireless Chipset Revenues To Pass \$10B This Year

With wireless devices proliferating across the globe, it should come as no surprise that wireless chipset manufacturers are raking in continually higher revenues. ABI Research reports that those revenues, which include profits from standalone and combination chipsets employing various wireless technologies (Bluetooth, GPS, Near Field Communications, Ultra Wideband, Wi-Fi, and ZigBee), will exceed \$10 billion this year. In terms of devices shipped, ABI indicates that more than 2 billion Bluetooth-enabled devices and 1.5 billion Wi-Fi-enabled devices will ship this year, noting that many devices (such as smartphones and tablets) include both technologies.

■ Smartphones, Tablets Not Protected Against Security Attacks

Juniper Research shows that, worldwide, just 5% of smartphones and tablets have security software installed. But the threats against those devices from malware, fraud, and device theft are steadily increasing. Within the next five years, Juniper Research predicts that about 20% of mobile devices will have security software installed as both corporate and personal users of smartphones and tablets recognize the need to protect their devices. As security threats increase and users become more aware of security problems, mobile operators and device vendors need to recognize the need for integrating security-related features that will track devices or provide the ability to lock and wipe devices should they be stolen, the Juniper Research report states.



■ Hard Drive Sales Rebound

More than a year ago, the global hard drive market was disrupted by the floods in Thailand. Today, the industry has fully recovered, according to IHS iSuppli, with shipments to the computer market expected to hit a record level this year. The enterprise market and the release of Windows 8 are driving demand. IHS iSuppli reports that hard drive shipments will reach 524 million units this year, up 4.3% from last year. IHS expects hard drive shipments to climb steadily through at least 2016, when shipments will reach about 575.1 million units. The IHS report covers hard drive shipments to the PC compute segment, which includes desktops, notebooks, servers, and storage systems.



■ Microsoft Updates Windows Server 2008 Support Expiration

Microsoft has extended support for Windows Server to Jan. 15, 2015. At that time, the product will move from Mainstream Support to Extended Support. Support was originally scheduled to transition on July 9, 2013. Microsoft has also reminded customers that it will no longer support Windows XP after April 8, 2014. According to the company’s “Support Lifecycle Quarterly Lifeline” newsletter, Microsoft says that WinXP “migration efforts should be well under way” and recommends “that customers running computers with Windows XP take action and update or upgrade their PCs before the end-of-support date.”

■ Study Finds Immigrants Founded One Quarter Of U.S. Startups

According to “America’s New Immigrant Entrepreneurs: Then And Now,” a new book that includes research data from 2006 to 2012, about one quarter of startup companies in the United States were founded by immigrants. More precisely, immigrant-founded companies account for 24.3% of startups formed this year, which marks a decline from 25.3% in 2005. According to Vivek Wadhwa, one of the book’s three authors and director of research at the Center for Entrepreneurship and Research Commercialization at the Pratt School of Engineering, Duke University, the stagnation of immigrant entrepreneurship should sound alarms. “The U.S. risks losing a key growth engine just when the economy needs job creators more than ever,” Wadhwa says. “The U.S. can reverse these trends with changes in policies and opportunities, if it acts swiftly.”

■ Containerized Data Centers Set To Grow Market Share

There’s little denying that containerized data centers, or pre-fabricated, fully enclosed, mobile structures that house data center infrastructure, are a hot trend. So much, in fact, that shipments of containerized data centers are expected to grow 40% over the next year, according to IMS Research, which was recently acquired by IHS Inc. Most of those shipments will go to North America, as some of the earliest adopters of containerized data centers are headquartered in the United States. Shipments to China, though, are expected to double during the next five years. “The benefits of containerized data centers are significant: mobility, speed of deployment, offsite manufacturing, outsourcing of design, and potential tax savings. Unfortunately, the current higher price of containerized solutions, as compared to like-for-like traditional builds, outweigh these benefits in many customer decisions,” says IMS Research senior analyst Liz Cruz. Product standardization and resulting economies of scale, she says, will allow prices to drop and the market to take off.

■ Survey Ranks America’s Most Inspiring Companies

What makes a company “inspiring?” Providing quality product backed by a quality experience are two major factors, according to the “2012 Most Inspiring Companies” survey conducted by Performance Inspired. This year’s top five most inspiring companies were Apple, Walmart, Target, Google, and Microsoft. About 30% of consumers talk positively about their most inspiring company every week, emphasizing the importance of an overall positive customer experience. “Consumers are counting on private businesses of all sizes to inspire and improve the world,” says Terry Barber, chief inspiration officer for Performance Inspired. “If a company can capture and promote a spirit of innovation and inspiration within its employees, they will have uncovered the secret to devout customers for life.”

■ Customers Mostly Satisfied With PC Industry

The latest American Customer Satisfaction Index, or ACSI, shows that customer satisfaction with the PC industry as a whole reached an all-time high score of 80 out of 100 this year. Although the ACSI categorizes the PC industry as all types of personal computers, including desktops, notebooks, and tablets, tablets contributed to much of the increase in overall customer satisfaction. “As tablets gain market share, overall customer satisfaction with the PC industry picks up,” says Claes Fornell, ACSI founder.

Shore Up Security

Recognize The Weaknesses So You Can Plug The Holes

AMONG ALL THE DUTIES the IT department is responsible for, security is arguably the most important. Security is also arguably IT’s most difficult task, as threats consistently come from all corners, including the enterprise’s own employees. Here are some tips for helping to identify and solve common security weaknesses.

✓ *Know Where You Are Weak*

Typically, a small to midsize enterprise’s greatest weaknesses stem from having inadequate security tools, staff training, and budgets.

Pierluigi Stella, CTO at Network Box USA (www.networkboxusa.com), says small to midsize enterprises typically have small security budgets because they view security “somewhat as a nuisance.” They also almost never have dedicated staff, he says, unless they must follow strict regulations. On top

of that, hiring a security specialist is expensive, Stella says.

Overall, he says, “too many organizations believe a firewall and some AV on the desktop are sufficient for their security.” Firewalls, however, are easily bypassed by specific targeted attacks (“you must have an IPS to augment the capabilities of your perimeter defense”) and most Trojans now are written to immediately take out endpoint antivirus protection, he says. Antivirus, he says, must be done first at the gateway to filter as many threats as possible before they hit workstations and servers.

Peyton Engel, technical architect at CDW (www.cdw.com), cites employees using their home computers, notebooks, and smartphones for company work as a common risk. “Organizations have far less control over those devices, despite their use for tasks that are just as sensitive

as those performed on company-owned devices,” he says.

Matt Goulet, Kaspersky vice president, SMB Sales, North America (www.kaspersky.com), says other common risks include unauthorized software, USB drives, social media, and unencrypted data.

✓ *Strengthen Your Defenses*

To address security weakness, CDW’s Engel says you need to become familiar with the SANS Institute’s Top 20 Critical Controls, a “good, industry-neutral set of best practices for improving security.” Although it’s not comprehensive and won’t necessarily cover every organization’s unique needs, he says, “it’s an excellent place to start and can help your organization jumpstart a solid security effort.”

Balancing expectations against capabilities is a small to midsize enterprise’s biggest challenge, Network Box USA’s Stella

says. “Some organizations expect their security departments to operate flawlessly, but when it comes to security, perfection is not necessarily attainable,” he says. What’s perceived as a security weakness is typically more of a mismatch between what is believed possible and what the security team can deliver, Stella says.

If an enterprise clearly understands the degree of risk associated with its current posture, Stella says, it can make rational decisions about how to improve. “However, many executive decision-makers are in the dark on these topics and may assume that buying a specific tool or sending people to a training session is adequate, which isn’t always the case.” Organizations that function best security-wise have management that secures “frequent, clear, and consistently structured updates regarding the state of security,” he says.



Security often isn't about "spending more; it's about spending smarter," says Kaspersky's Goulet. "If you can rework your budget to reallocate funds or to make additional spend possible, there are a few key things to consider." These include focusing on a single management solution for multiple products/technologies to ease overall management and purchasing intuitive management toolsets that meet your security policy and risk posture. "These require the least amount of staff training and are easy to transition as personnel change," Goulet says.

✓ *Convince Management That Security Matters*

Engel says that while management needs solid data to foster an adequate security program, it's ultimately responsible for seeing that the security program happens. "Typically, the biggest

challenges for executive management have to do with being too far removed from the true state of the organization's security and a tendency to look toward industry and media trends around security rather than unique organizational needs," he says. "The best thing executive management can do is to maintain high-level situational awareness of the organization's overall security strengths and challenges, focusing on the top priority issues of the organization, rather than focusing on what the rest of the world is doing."

Particularly with small or mid-sized enterprises, Stella says, it's often difficult to convey the importance of security to the business' well-being. One reason is that management is often "unaware of the threats and that they could happen to anyone," he says. Hackers, he says, target large and small organizations, but

large organizations are more likely to have the resources to recover. Outside the United States, he says, there's been an upward swing in DoS attacks against small businesses conducting business online. "If your livelihood depends on the availability of your Web site, such an attack can take your company down," Stella says. "It's undeniably time SME management wakes up to the glaring fact that Internet issues aren't the exclusive realm of large corporations."

✓ *Consider Outsourcing Security*

Before making any critical security changes, including outsourcing security, Goulet says you need to determine if your organization has the necessary expertise or is willing to research network security based on its needs, if the organization has control over its current

security solutions, if it has the budget to hire and train staff to manage tasks/projects, if outsourcing would reduce overall operating costs, and if it can find a vendor it can trust.

Stella, however, "wouldn't even question" outsourcing security, citing it as truly the only option that makes business and practical sense.

"Think of it this way: If you need physical security and you're a small operation, do you train your own security guards or do you hire outside help? I think we all know the answer," he says. "So, when it comes to Internet security, why treat it any differently? Why expect your network engineer to be skilled enough that he/she could also take care of your security? Security is a highly specialized field; no one who doesn't do security as a specialist can secure your network adequately." ■

✓ *Work For A Budget*

"Unfortunately, most weaknesses tend to roll up to a lack of adequate budget," says Matt Goulet, Kaspersky vice president, SMB Sales, North America (www.kaspersky.com). Beyond underfunded staff training, budget can impact the organization's security tools, meaning the use of outdated solutions. "Accurate testing and updating of the available solutions in the marketplace are placed as a lower priority simply due to shrinking budgets," he says.

✓ *Beware Insider Threats*

Insider threats are always the most dangerous type of threat, says Pierluigi Stella, CTO at Network Box USA (www.networkboxusa.com). "You must always start from the assumption that no one is to be 100% trusted." Deciding how to protect against insider threats can be complex, he says, "but data that's too important to lose should not be accessible by a single person, not all at once, not with a single password," he says. "Access to a vault should require two keys held by two different individuals, carefully chosen. As a starting point, adopt the same idea with electronic data."

BONUS TIPS:

✓ *Good Outsourcing Fits*

Peyton Engel, technical architect at CDW (www.cdw.com), says outsourcing is a good fit where it's possible to leverage a vendor's investments in economies of scale. "Remote monitoring of security events and management of security infrastructure are classic examples," he says. Also good are tasks involving considerable repetitive, time-consuming work, especially those an organization lacks expertise in. "Outsourcing is usually not a great fit for one-time tasks of strategic importance to the organization," he says.

✓ *Develop A Policy*

Organizations can help themselves by putting a security policy in place, starting with a written plan, says Matt Goulet, Kaspersky vice president, SMB Sales, North America (www.kaspersky.com). "It's far easier to shore up security risks when the finite goals are documented," he says. Policies might include implementation of best practices for resources already available; restricting access to networked resources; reviewing existing solutions for redundancy; ensuring all OSes and software have the latest patches; establishing and enforcing policies for acceptable Internet use, Web browsing, IM, and the like; and creating and enforcing software standards for computing platforms.

HOW TO

Clean Your Data Center

When To Do It Yourself & When To Call In The Experts

TO UNDERSTAND JUST HOW IMPORTANT it is to thoroughly clean your data center on a regular basis, simply look at the importance of the data center itself.

“The data center is the central nervous system of the organization, and unclean areas negatively affect the performance and longevity of the equipment,” says Tom Conners, market manager of data centers at SquareCare (www.squarecare.com). “Large data center operations can lose as much as \$4 million per minute due to systems outages brought on by processor performance degradation.”

Avoiding performance degradation is the key to running a long-lasting data center and successful company,

but it can be difficult to know where to get started and how to proceed. We’ll show you what parts of your data center should be cleaned and how often, which cleaning tasks can be performed in-house, and when it’s time to invest in the expertise of a professional cleaning service.

Understand What Needs To Be Cleaned & How Often

When beginning the process of cleaning your data center, you should start by looking at every surface, space, and piece of equipment that will need to be cleaned. “Everything can and should be cleaned,” Conners says. “This includes cleaning

under all access floors within the plenum space, access floor panels and support structures, server racks, CRAC and HVAC units, UPS units, light fixtures, walls, ceilings, and all non-raised floor surfaces.”

In essence, a solid data center cleaning should leave no stone unturned. Conners recommends that companies have the under-floor portions of the data center as well as CRAC and UPS units cleaned annually, but that the top of the floor should be cleaned monthly or semi-annually. It’s a good idea to set up a solid cleaning schedule to ensure that your room is clean and equipment will be able to perform at the highest level.

Key Points

- Understand exactly what needs to be cleaned inside your data center. This will help you realize the importance of hiring a cleaning service rather than doing everything yourself.
- Know the limits of what you can clean. Focus on general office environment cleaning and leave in-depth data center cleaning to the experts.
- Compare cleaning services to ensure you are getting the highest quality of cleaning for the best possible price and maintain the level of cleanliness after the fact.



Only Perform General Office Cleaning Yourself

With most data centers tasked with cutting costs, it may make sense to avoid hiring data center cleaning services and try to do everything yourself. But most companies have janitorial staffs that are only experienced in cleaning general office environments. Your janitorial team can clean some carpeted and non-carpeted flooring, upholstered chairs, lobbies, break rooms, and other select areas, according to Conners. But in the end, there are certain parts of data centers that should be left only to professional cleaning services. “Every commercial building needs professional cleaning services,” says Jason

Roth, director of technical services at Sterile Environment Technologies (www.set3.com). “However, any controlled environment needs controlled environment specialists, not just a professional cleaner. The science used to clean in a data center is unique and cannot be replaced with common janitorial cleaning.”

Choosing A Cleaning Service


After you’ve exhausted the cleaning capabilities of your in-house janitorial staff, it’s time to select a third-party service. From the start, you should compare the reputations of possible choices and the services they provide. Ask for company references from cleaning service providers

and ensure that they have a well-defined process for cleaning the essential parts of your data center. You’re hiring these vendors to clean the spaces and equipment in your data centers that you aren’t able to, so you should make sure they will do a satisfactory job.

Don’t forget to also compare the pricing options for different cleaning services. “The data center cleaning should be a turnkey cost based on an agreed scope before the job,” Roth says. Conners adds that the price will depend on the thoroughness of the work and the size of the facility, which means that it isn’t always the best bet to simply choose the least expensive option.

Keep It Clean

Once your janitorial staff has had a pass and long after the outside cleaning team is gone, you must take steps to maintain the cleanliness of your data center. You should institute strict policies that determine which employees should enter the data center as well as their expected behavior once they are inside.

For instance, data center employees should take great care not to track dirt and debris into the data center room. No food or drinks should be allowed anywhere inside the room or near servers and other important equipment. Creating a set of standards for your data center workers is one way to cut down on cleaning costs and make future cleanings easier. 

Top Tips

The following tips for finding the right data center cleaning service were provided by Jason Roth, director of technical services at Sterile Environment Technologies (www.set3.com):

- ✓ Make sure the company you plan to hire isn’t simply a janitorial service that claims to provide data center cleaning. The cleaning service should have vast experience and expertise.
- ✓ Ask for or seek out references from reputable companies that have experience with the cleaning service you want to hire. The vendor should be able to provide a list of contacts to call.
- ✓ Develop a method of procedures for cleaning your data center(s). This should include standards that must be followed so a company is contractually obligated to follow your company’s specific methodology.



Action Plan

Tom Conners, market manager of data centers at SquareCare (www.squarecare.com), offers the following steps for getting the most out of the cleaning process:

- Advise your insurer that you have an active scheduled data center maintenance program. Regular maintenance, including cleaning, is required by most risk management agencies, especially if you are mission-critical.
- Ask to see all debris retrieved from the cleaning process. This alone can justify the cost of the cleaning.
- Don’t allow heavy pallets or carts onto data center flooring. This eliminates a major cause of scuffing and damage to floor panels and reduces the amount of debris brought into the facility.
- Require daily progress reports from your cleaning vendor when onsite. It’s the only way to know you’re getting the quality of cleaning you’re paying for.
- Strictly observe standards such as prohibiting food, drink, or liquids of any kind in the data center; regularly cleaning the carpets in high-traffic areas; and eliminating non-essential materials from around your servers and other infrastructure.

Get Started

When you decide to hire a cleaning service, you’ll want to be sure to thoroughly compare providers. Jason Roth, director of technical services at Sterile Environment Technologies (www.set3.com), recommends that companies come up with a series of questions to ask possible vendors.

- Roth says that cleaning services should:
- be trained to certify air class cleanliness according to ISO 14644
 - confirm static pressure
 - provide velocity testing, if needed
 - use equipment that is certified for ISO Class 8 environments

You also need to know what specific services the cleaning company provides for the price it charges and make sure the cleaning team has a pristine reputation.

Set Up A Colocation Arrangement

Research & Communication Are Key To An Agreement You Can Live With

BY THE TIME you’ve selected a colocation provider, you’ve no doubt expended a good deal of time and energy arriving at the decision.

Unfortunately, you’re still left with the small matter of ironing out an agreement—a process containing myriad details that, if not addressed with care, could seriously impair the enterprise for years to come. Reviewing contracts and SLAs is imperative, but so is knowing the right questions to ask, demands to insist on, team members to include, and more. Before signing on the dotted line, consider the following.

Determine Your Value

When taking an in-depth look into your contractual relationship with a colocation

provider, it’s important to forecast what you’re paying for beyond a monthly charge for the space.

Darin Stahl, Info-Tech Research lead analyst, suggests building a six-year budget that includes monthly recurring costs but also one-time fees and transition and exit costs. “The figures don’t have to be precise, but throw them in there and give yourself and your management team a full view of what you’re signing up for,” Stahl says.

Look particularly carefully at pricing for services provided, such as if you need the provider to, say, remotely restart a server. The contract may include this service cost, Stahl says, but some brand-name vendors “exclude those costs unless you buy a super duper services package on top.”

Thus, pricing may look good hosting-wise, but the vendor may charge upward of “\$55 per 15 minutes of incident and a one-time fee of \$300. That’s when you really have to think about what the modeling looks like,” he says.

Documenting real long-term costs, he says, lets you enter negotiations knowing your real value to the vendor. So, instead of \$2,800 a month, he says, “I’m a \$1.9 million value, and I think that’s a much better place to be from a negotiating place with the vendor.”

Plan Your Exit

Brett Femrite, director of business development at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net),

Key Points

- Enterprises should determine all costs associated with a colocation provider, beyond monthly recurring fees.
- Companies should carefully review SLAs for uptime and performance guarantees.
- Enterprises should know how the provider will handle adding services in the future, as well as exiting the provider’s space.

says before signing a contract, you should review the agreement and SLA for uptime and performance guarantees and “recognize and document any benefits due if the SLA is not met.”



Also note access and support policies and procedures; points of contact for support, sales requests, and escalation management; lead times for provisioning orders; whether you must obtain additional insurance; whether access to telecom carriers is needed; and any compliance requirements to meet.

“In legal negotiations, communicate the intent or the underlying concern with any points that you are proposing to change,” Femrite says. “If the provider company understands your reason for requests with the contract, they will know how they can accommodate you in the negotiation.”

Also pay attention to issues concerning new services added and transition details.

Stahl says if a vendor delivers a new rack, for example, the agreement may cite a given number of days you have to contact the provider before it deems that you’ve accepted the service. “So now you’re on the hook for it payment-wise, and if there’s any deficiencies with the service, you have to go through the standard protocols and issues with respect to how you mitigate that.” Better, he says, is defining your acceptance terms when writing a statement of work and testing it “because it’s the one time you have to withhold payment from the vendor and make them resolve that deficiency.”

You should also know the provider’s terms for transitioning in and out of the environment, Stahl says, as “exiting

early is a real possibility.” Here, a contract might state the provider can give 30 days notice to exit, which likely isn’t enough time to remove all your equipment. “What happens on the 31st day?,” he says. Check if you’ll get the vendor’s most skilled team to assist with the exit and what the related costs are, he says.

Inspect The SLA

Femrite advises comparing the SLA to the services you plan to use, as some SLAs have varying levels of coverage based on services. “Be sure to note whether there’s a redundant service offering that you must opt in to use in order to be fully covered by the SLA.

Examples include A/B power or redundant network connections,” he says.

A personal visit to a facility is also important. Use the visit to inspect the facilities, get a clear idea of the security and other systems in place, and talk with tech support and other professionals at the provider.

Overall, Stahl cautions against getting caught up in flash. Providers will “show you some pretty stuff,” he says, but the devil is in the details in the market of running a data center. Check if cabling under a raised floor is clearly labeled and there’s attention to detail, note who handles security and how (swipe cards, in-cage surveillance camera, etc.), and perform similar quality checks, he says. [P](#)

Top Tips

- ✓ **Know thy neighbor.** Smaller colocation providers that compete on price and don’t own their facility typically can’t offer an iron-clad SLA around the actual facility, says Info-Tech lead analyst Darin Stahl. Using such providers can result in acquiring “interesting neighbors,” such as one operating a spam ring.
- One Info-Tech customer, Stahl says, was involved in such a scenario in which the entire IP block the provider was managing ended up on a blacklist and the customer “couldn’t get stuff in and out from an email perspective.” Ultimately, the customer had to switch providers, which cost tens of thousands of dollars. “A lot of this business is very much like buying real estate,” Stahl says. “It’s all about the location. You’ve got the great house. It has a marble kitchen and all that stuff, and the schools are pretty good, but meanwhile, your neighbor is a Hell’s Angel.”
- ✓ **Plan ahead.** “Because both parties’ interests need to be protected under the agreement, legal review of contracts can take time and have the potential to delay your installation or cause you to miss your deadlines,” says Brett Femrite, director of business development at Rackmount Solutions (866/ 207-6631; www.rackmountsolutions.net). Request a copy of the agreement early in the sales process, he says, so your legal team can review and begin negotiating in advance.

Action Plan

- Define your requirements and expectations of the provider.
- Determine the products, services, and equipment the vendor provides.
- Determine the lead time the provider needs to provision services.
- Present your requirements to the provider for its responses.
- Set a timeline for completion.
- Review the agreement and determine who will sign it.
- Conduct legal negotiations to communicate your intent and concerns with points you’d like changed.
- Set a plan of action and schedule a move-in date.



Get Started

Before negotiating with a colocation vendor, have on hand a complete copy of the agreement, SLAs, acceptable use and access policies, billing and invoicing procedure details, insurance requirements, and the vendor’s contact points. Include in the negotiations and contract signing the company’s CIO/IT director, legal team, CFO, network and systems administrators, infrastructure manager, appropriate IT and facilities staff, and those executives who will eventually help transition the shift from deployment and maintenance issues to planning future innovation and development needs.

SIX QUICK TIPS

Improve Email Archiving

Avoid Compliance Issues While Ensuring Business Continuity

IF YOU’VE EVER let your inbox get completely out of control with hundreds or thousands of emails, you understand how difficult it can be to find one specific message from six months ago that is essential for customer or compliance reasons. It’s nearly impossible to save every email and equally difficult to recall them at a moment’s notice.

Now imagine that on an enterprise-wide scale. Companies can invest in email archiving solutions that automate the process. Investing in a solid archiving solution can not only improve your retention and discovery capabilities but also help you avoid compliance issues and maintain business continuity.

✓ *Invest In A Third-Party Solution*

You may think that using your email

will be enough to store important emails and be ready for potential compliance or discovery issues. But the truth is that most email systems simply don’t have enough archiving tools to provide the level of retention companies need. Plus, if you do receive a discovery order from a judge or simply want to quickly find an archived email, built-in archiving solutions often don’t provide in-depth search options that let you seek out an email and bring it up in seconds.

That’s why it’s widely recommended that companies go one step further and invest in a third-party email archiving solution for their email system to avoid potential issues. “Backup, maintenance, and recovery will take prolonged hours, if not days,” says a Sonasoft

spokesperson (www.sonasoft.com). “If the Exchange Server goes down, then everything, including an organization’s recovery ability, is also gone.” Having a third-party solution in place, whether onsite, offsite, or cloud-based, will give you peace of mind knowing that even if your email system fails or completely crashes, you’ll still have access to important email archives.

✓ *Read Up On Current Trends & Offerings*

When trying to improve your email archiving measures, it’s important to research as much as you can upfront on the different types of solutions available. For instance, you can opt for an

onsite solution. Kirk Averett, director of product marketing and management for Rackspace’s email and apps team (www.rackspace.com), says an onsite solution typically is a better fit for large enterprises because of the need to purchase expensive hardware and software archiving solutions. Onsite solutions also require that the company do most of the “heavy lifting to deliver very high system availability,” he says.

Another option is offsite email archiving, which lets you team up with a third-party vendor that will integrate its solution with your email system and be “responsible for maintenance, storage management, and uptime,” Averett says. Offsite archiving is also great for disaster recovery and business



continuity, because you can store your email files in multiple locations and still have access to them even if there is an outage or natural disaster.

One alternative that is growing in popularity among small to mid-sized enterprises is cloud-based email archiving. However, Averett warns that there are “very few true cloud archiving providers,” so you’ll have to do more research to ensure it’s a fit for your company. “True cloud offerings are built on top of cloud infrastructure for computing power, search indexes, and especially for storage,” Averett says. “A cloud solution that has been properly designed will never present a storage problem, even if a customer is retaining messages for 10 years or more.”

✓ *Establish & Maintain Solid Compliance Policies*

Depending on your company’s industry, compliance is one of the main drivers behind implementing an email archiving solution. It’s important to not look at these regulations as negative aspects of doing business, but instead see them as helpful to your industry as a whole. “Compliance regulations, such as HIPAA, FINRA, SEC, GLBA, SOX, etc., were established for a real purpose to ensure the integrity and transparency within a certain business sector,” according to Sonasoft. “Meeting these compliances not only helps the consumer and the specific industry, it also can save the company’s own assets when something does go down.”


And while it’s important to maintain compliance policies for your company, it isn’t enough to write them down and keep your employees informed. You should also consider working with a third-party vendor to find an archiving solution with regulatory compliance features built-in for your specific industry. Most archiving companies are experienced in working with companies in highly regulated industries, so they should be able to find you a solution that fits or help customize one for your specific needs.

✓ *Choose A Flexible Solution From The Start*

When purchasing an email archiving solution, one of the most important things to consider is to focus on flexibility. You

want to make sure the solution won’t force you into a corner years down the road and pose problems that will cause headaches for your IT employees.

“I’d say flexibility is the key of an email archive solution,” says Doug Pruitt, Exchange solutions architect at Metalogix (www.metalogix.com). For example, Pruitt says, some products will automatically set retention and disposition policies so users don’t have to think about when and how long to archive emails.

“Choosing the right archive solution will ultimately reduce many of the typical user and IT constraints and problems in an Exchange environment and put a foundation in place that will automatically scale as your company grows,” he says. 

✓ *Regularly Test Your System*

When it comes to email archiving, taking a set-it-and-forget-it approach isn’t enough, especially if you are in a compliance-heavy industry. That’s why it’s so important to test your archiving solution to ensure it’s working properly. “A lot of businesses hire a consultant to install an onsite email archiving system, only to find out two years later that it stopped working a year prior after applying an update to their email servers,” says Kirk Averett, director of product marketing and management for Rackspace’s email and apps team (www.rackspace.com). “Like any other form of back-up, you’ll only know that it is working if you check on it.”

✓ *Don’t Rely On Informal Retention*

Some companies may think they can get by without using an email archiving system. But if they are in an industry with complex regulations and compliance issues, then allowing employees to decide what to keep and what to delete can lead to negative consequences. “Informal email archiving by each employee will not be of any real use in the case of a lawsuit or a natural disaster,” says Kirk Averett, director of product marketing and management for Rackspace’s email and apps team (www.rackspace.com). “Taking a little extra time to find an inexpensive but practical solution like cloud-based email archiving can save a lot of time and money later. In many cases, you can outsource your email servers at the same time you sign up for archiving and kill two IT distractions with one stone.”

BONUS TIPS:

✓ *Avoid Excessive Redundancy*

“Look for an email archive solution that provides single instance storage, which is the ability to ensure the same email and attachment is only stored one time on your server when multiple users receive the same information,” says Matthew Bründl-Pandzich, director of Metalogix’s archive solutions business unit.

✓ *Seek Out Built-In Management Tools*

In addition to single instance storage, you should make sure the email archive solution you choose has a tool to help locate and eliminate PST files that aren’t archived or indexed, take up a lot of storage space, and can easily become corrupted, Bründl-Pandzich says.

SIX QUICK TIPS

Plan A Server Refresh

Use New Servers To Implement More Efficient & Effective Features

IF THERE’S ONE THING in the data center that requires significant attention, it’s your servers. A drop in performance creates a domino effect that can be felt by anyone within the company and even by customers outside of the organization.

For every data center, there comes a time when a server refresh is needed to beef up capabilities, increase energy efficiency, and ensure that your company will always be up and running to serve customers. We’ll show you a few things to keep in mind when going through a server refresh that should help you save money while still getting the performance and features you need.

✓ *Know When It’s Time For A Refresh*

Clemens Pfeiffer, CTO and founder of Power Assure (888/225-1575; www.powerassure.com), says there are a couple of sure signs it’s time for a server refresh. For starters, when new servers use so much less power and space that it’s less expensive to replace the old ones than keeping them running, it’s time for an upgrade. Also, when compute needs are expected to surpass current IT capacity and key performance indicators show data center performance may start to degrade, planning needs to be done ahead of time and regularly updated so that IT projects the right time and criteria for a hardware refresh.

“Moore’s Law tells us performance doubles approximately every 18 to 24 months,”

Pfeiffer says, “therefore, it is prudent to consider a hardware refresh every three years in order to take advantage of the latest performance improvements and technological advances in the IT industry.” Trends such as virtualization and cloud computing may necessitate review of the IT strategy and refresh cycles earlier than planned, he says.

✓ *Look Into Upgrading Components First*

You may assume that a server refresh requires an overhaul, but it’s possible to simply swap out components, such as hard drives or network devices, to give your servers that extra boost. “Provided a customer sticks with industry-standard chassis and rack solutions, swapping out

components or systems for higher efficiency models are the most cost-effective paths to hardware upgrades,” says Don Clegg, vice president of marketing and business development at Supermicro (408/503-8000; www.supermicro.com). “Depending on supplier and processor roadmaps, a refresh can start at the component level upgrading HDDs to SSDs or installing faster memory and higher bandwidth interconnectivity options.”

Clegg also points out that you can upgrade the BIOS on a motherboard or upgrade your CPU and other components. It’s possible to keep your existing racks and overall infrastructure setup without completely starting from scratch. And you can refresh over time rather than all at



once, letting you spread out the costs associated with server upgrades.

✓ *An Opportunity For New Technology*

Buying new energy-efficient servers gives you the option of upgrading the base features of your server. You can invest in not only the features you'll need now, but the features you'll need as your company continues to grow. Two such features, which often go hand and hand, are consolidation and virtualization. You may be able to replace two or three older servers with a single new unit, which can free up additional space for other pieces of equipment or increase the overall airflow of your data center. And you can

implement server virtualization, which can lower your costs for individual computing platforms for employees.

"Virtualization has become a mainstream practice, and it can be used to assist consolidation by allowing multiple application workloads to share the same physical servers," says Jenna Maertz, research analyst at Info-Tech Research Group. "A combination of server consolidation and virtualization can save between 40 and 75% of upfront and ongoing hardware costs, making a server refresh significantly more affordable."

✓ *Beware The Hidden Costs Of Old Equipment*

You may be tempted to hold on to your older servers for as long as possible. But

there's a downside. "As a general rule, servers should be replaced every four to five years," Maertz says. "Keeping aging equipment longer than this timeframe puts you at risk for actually spending more than if you just replaced the servers in the first place. You may save on the initial capital investment, but there are hidden costs to keeping old equipment."

Some of these hidden costs include additional hardware investments, such as replacement parts, system adjustments, and add-ons, Maertz says. She also says that installing and running newer applications on older hardware can lead to major compatibility issues and the need for expensive server upgrades in a short amount of time. And servers that have

been used extensively for a longer period of time are more prone to breakdowns.

Server upgrades are also a good time to take a different approach by better integrating new servers during a refresh, Maertz says. "Stop taking a silo approach to server deployment and start thinking more holistically," she says. "Your server infrastructure is like a puzzle. There is one overall picture, and you need to put the pieces together to make it all fit. You have X overall requirements and X total capacity; now, figure out how the pieces fit by dividing your applications across your available servers, using multiple applications on each physical server. Be sure to take into account both current and future capacity for your application workloads." ^P

✓ *Become More Energy Efficient*

Implementing a server refresh provides a great opportunity to be more efficient environmentally and in terms of energy consumption. Older servers will often draw more power than newer, more efficient alternatives, so it may be more cost-effective to buy brand new servers as opposed to trying to maintain your existing ones. Improved energy efficiency can also lead to savings elsewhere. It will reduce the need for constant maintenance and repair, which can free up your IT team's time for other projects. And it can also make your other systems more efficient.

"Energy consumption for data center cooling is rising," says Don Clegg, vice president of marketing and business development at Supermicro (408/503-8000; www.supermicro.com). "The only way to curb this runaway cost and be more environmentally friendly is to transition to energy-efficient servers that operate at higher ambient temperatures and reduce dependency on air conditioning."

✓ *Communicate With Your Vendor*

When going through a server refresh, you should be in constant contact with your vendor to not only ensure you are getting the features you need, but to request additional services that may be provided for free. "A helpful tip is to ask vendors to help with capacity planning," says Jenna Maertz, research analyst at Info-Tech Research Group. "Many vendors will try to win your business by offering free workload modeling services and tools, which can help you determine the capacity requirements for both your virtual and non-virtual workloads. This can help ensure that you get the maximum capacity out of each of your servers."

BONUS TIPS:

✓ *Get Facilities Involved*

Clemens Pfeiffer, CTO and founder of Power Assure (888/225-1575; www.powerassure.com), says any server upgrade needs to include representatives from both the IT and facilities sides. "It's no longer sufficient to think about IT and facility as two distinct functions. With temperature and power consumption available from servers, this information needs to be fed to the facility environment."

Along those lines, you need to take a look at power, space, and cooling resources when selecting servers. "Operators need to make sure there is enough infrastructure capacity in place to support the new servers," he says.

✓ *Upgrade Your Racks & Chassis*

If you don't already have standardized racks or enclosures for mounting multiple equipment modules, then a server refresh is a great time to make that change. "Look for server solutions with designs incorporating sliding rails and tool-less chassis access for easy maintenance and access to hot-swap hard drives, power supplies, fans, and other components that may need replacing," says Don Clegg, vice president of marketing and business development at Supermicro (408/503-8000; www.supermicro.com).

SIX QUICK TIPS

Better Airflow Management

Tips For Identifying & Remediying Data Center Airflow Problems

OF ALL PROBLEMS data managers face, airflow management often represents the greatest opportunity for improvement, says Lars Strong, senior engineer at Upsite Technologies (888/982-7800; www.upsite.com). “Knowledge of this is what is driving the attention on containment strategies and the myriad of other ‘solutions’ showing up in the industry today,” he says.

Research the Uptime Institute conducted more than a decade ago, he says, found that 60% of conditioned air leaving a raised floor came out of unmanaged openings. Despite the knowledge available today, he says, bypass airflow surprisingly remains “the most common cause of stranded capacity, unnecessarily high operating costs, and hot spots.” Here are some tips to help identify airflow-related problems and remedy them.

✓ **Know Where To Look**

Common causes of bypass airflow, Strong says, include unsealed cable openings; unsealed or excessively large openings

under PDUs or remote power panels; perimeter penetrations; and most significantly, too many running cooling units.

Gabriel Pizano, AmeriCool national sales and service manager (800/680-0725; www.americoolinc.com), says beyond blocked or restricted airflow (something caused by equipment placed too close to a wall), not having a properly sized AC system is a common problem for data centers. “An undersized cooling system will result in equipment running hotter than normal,” he says, thus reducing equipment’s lifespan and efficiency. “For most SMEs, cooling a data center usually involves turning down the entire building’s AC,” he says.

Poor cable management is another common problem. Laura Viars, senior sourcing specialist at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net), says while larger enterprises typically conduct significant planning, including cable management considerations, when designing and/or

upgrading a network, many administrators of networks in small to midsized enterprises “don’t realize the importance of proper cable management and how it promotes efficient and effective airflow.”

As for airflow leakage—something generally caused by insufficient sealing—Viars says data centers can’t maintain optimal temperatures for equipment if air isn’t traveling the right path. “Warm air begins to recirculate, which makes for less than ideal conditions within the cabinets,” she says. “Airflow leakage is likely caused by either a lack of understanding regarding airflow principles or the inability/unwillingness to allocate funds to essential airflow management accessories.”

✓ **Survey Equipment Intake Temperatures**

Strong says IT managers have two primary considerations regarding airflow management: Are there environmental problems, and if not, could airflow management be improved to lower

operating expenses. A data center and the computer room within it “exist for the primary purpose of providing continuous power and continuous cooling, the proper intake temperature at the face of IT equipment,” Strong says. “The first step is to conduct a detailed survey of IT equipment intake temperatures.” An infrared thermometer can make this easy, quick work, he says.

You’ll also want to determine a computer room’s CCF (cooling capacity factor), or the ratio of installed and running cooling capacity to the IT load. The ratio should be about 1.2, Strong says, or put another way, the installed and running capacity is 120% of the heat load in the room, something only possible if conditioned air is well managed.

“Many sites have over 200% of the required cooling capacity running,” Strong says. “The CCF provides the greatest and easiest insight into the opportunities for improving IT equipment reliability, increasing power density of the





room and individual cabinets, and reducing operating cost.”

✓ *Spot & Fix The Problems*

To identify airflow problems, AmeriCool’s Pizano suggests measuring air temperature at hot spots in racks. “Ensure the temperature at the top of your rack (since heat rises) doesn’t exceed the equipment’s optimal operating temperature,” he says. Because the most common airflow problem is inadequate cooling, he says, enterprises should make upgrading cooling capacity their first priority. “Supplemental cooling with portable, ceiling, or new rooftop units are a common remedy,” he says. Rackmount Solutions’ Viars says identifying airflow issues can be easy (a server failing due to overheating is an obvious sign), but doing so early on is important. Monitor temperatures within cabinets, she says, whether using sophisticated monitoring software with temperature probes or simple adhesive

temperature strips. This will “help ensure you’re one step ahead of a potential disaster,” she says. Additionally, visually assess cabinets inside and out. Unkempt cable bundles that appear to be obstructing airflow probably are, she says. And if you’re maintaining operating rows/aisles of cabinets, look for gaps between each cabinet. “As small as they may be, gaps can contribute to inefficient cooling,” she says. Strong cites five steps to address airflow problems:

- Sealing the computer room (openings in perimeter walls; inspect columns to ensure conditioned air isn’t escaping to adjacent floors).
- Sealing all openings in raised floors that don’t deliver conditioned airflow directly to intakes for IT equipment (cable openings under or behind cabinets, holes under PDUs, conduit penetrations, etc.).
- Installing blanking panels in unused rack unit openings to prevent rear-to-


front circulation of hot exhaust air from the servers.

- Adjusting the number and placement of perforated tiles (there should be no perforated tiles in hot aisles or open spaces).
- Tuning computer room cooling (conduct a study of heat load, cooling capacity, and airflow to determine how many cooling units should be operating and how many perforated tiles need to be installed and where).

“It’s very important to recognize all these steps are prerequisites for the effective and efficient operation of any advanced cooling strategy, such as cold and hot aisle arrangement, cold or hot aisle containment, ducted return, etc.,” Strong says.

✓ *Cut Costs Where Able*

As Viars says, “airflow management doesn’t need to be expensive.” Though cable management can be complex, she

says, it “can be facilitated by a few well-placed Velcro ties” that prove effective and inexpensive if done right. Also, Viars says, smaller enterprises “can buy temperature strips for \$10 a pop that will do the job just fine.” Buying filler panels in large quantities is also fairly low-cost, she says. When it comes to cooling, Pizano says, many distributors offer special leasing arrangements for temporary or seasonal cooling needs and most have rent-to-own programs. Additionally, portable commercial AC units cost significantly less than adding a rooftop system and are easily portable. Upon fixing airflow problems, Strong says, “one person needs to own the computer room,” meaning “nothing happens without that person’s signoff.” This ensures that all IT and facilities considerations are accommodated while maintaining the lowest possible operating cost and highest possible capacity and reliability, he says. 

✓ *Manage Cables Post-Installation*

Laura Viars, senior sourcing specialist at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net), says that, although it’s easier to implement cable management in a cabinet prior to installing equipment, it’s not impossible to do in a cabinet already populated. She recommends vertical and horizontal cable management and ensuring there are no unnecessary gaps between equipment. For racks and cabinets not fully populated, use filler panels to cover open spaces, she says, and grommets (especially brush-style) in cable entry points to keep air from escaping.

✓ *Check Your AC Capacity*

Gabriel Pizano, national sales and service manager at AmeriCool (800/680-0725; www.americoolinc.com), says part of effective airflow management is ensuring the building’s AC has the proper cooling capacity to cool equipment. “With proper cooling BTU/hr, SMEs can maintain their equipment at efficient temperatures and upgrade to new equipment,” he says.

BONUS TIPS:

✓ *Start Here*

If IT can only address one airflow area, Lars Strong, senior engineer at Upsite Technologies (888/982-7800; www.upsite.com), suggests sealing every raised floor opening so that “all conditioned airflow leaves the raised floor plenum in locations that will directly support the cooling of IT equipment.”

✓ *Be Consistent*

Laura Viars, senior sourcing specialist at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net), says small to mid-sized enterprises must consistently monitor and document temperatures to spot unfavorable fluctuations. Do so on a schedule, she says, to more easily identify patterns. And be consistent with cable management. Although it might be tempting to worry about cabling after installing new equipment, “If you do it right the first time, you’ll save yourself a lot of trouble,” she says.

Better Monitor Your Network

Identify & Prevent Problems That Impact Performance

THE IMPORTANCE OF network monitoring can't be overstated. The livelihood of a business literally rides on smooth, consistent network performance.

"Uptime, quick response times, available resources, and both consistent and reliable service" might seem like marketing buzzwords, but they undoubtedly matter, says Michelle Warren, president of MW Research & Consulting. "Without them, the business users will experience reduced productivity times, increased frustration, and resentment toward IT." To avoid such negatives and others, consider the following.

Train Your Focus

Before you run an in-depth network performance test, you should ask your workforce and even customers about their experience when using the Internet and Web-based solutions. This information can help you decide where problems may be and whether there is a real need for a boost in

performance. If specific applications aren't running well on the network, then regular users will let you know.

You need to determine whether any problems you spot are tied to applications or the network in general. Check your application performance to ensure that the issue employees or customers are facing doesn't lead to one app. If an app works well most of the time, then you may only need to dedicate more bandwidth. But if an application never works well or multiple applications have issues, then it could be a problem with the network.

The network could also be the problem if your company goes from seeing isolated network problems on certain applications with specific users to having more varied issues across lots of different users and applications.

Understand Your Goals

Although user productivity is a primary goal for enterprises, the diverse mix

of applications and network resources required can make monitoring and management challenging, says Eric Hanselman, research director, networking at 451 Research. Focus first on application and storage performance, he says.

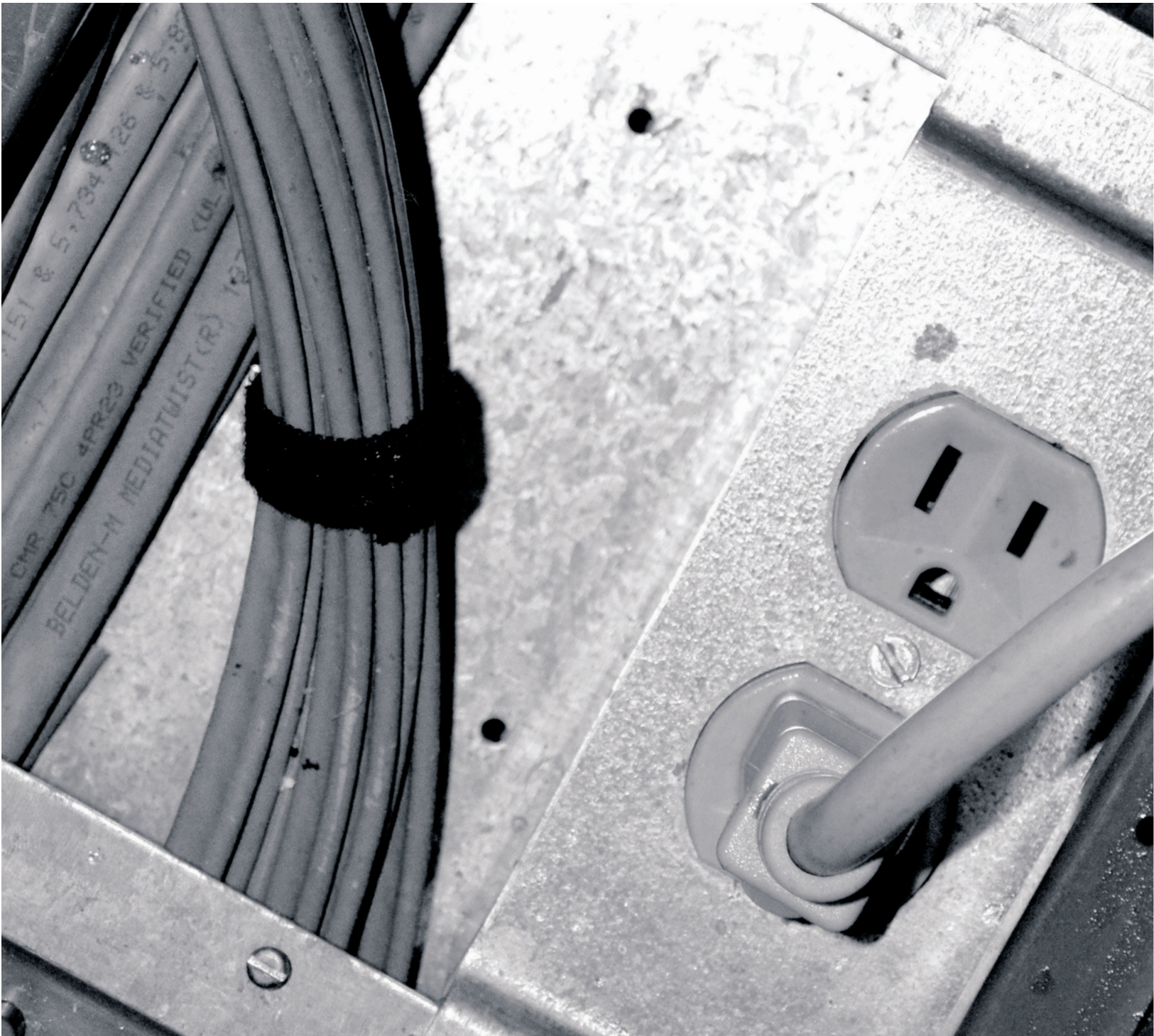
"Most SMEs have some type of network-based storage, and it's important to determine when performance issues are due to network limitations or those of the storage systems. Network analysis tools with storage awareness can help spot potential troubles," he says.

Managing application performance can be more challenging, Hanselman says, because locally hosted and remotely delivered applications produce "wildly differing factors" that require different management approaches. More sophisticated tools can diagnose local application performance problems, he says. Applications accessed via the Internet require an approach that addresses Internet access capacity.

Key Points

- Applications and storage are two key areas to focus on where network performance is concerned.
- Gaining visibility into network performance generally requires using one or more network management tools that can provide application-to-end-user insight.
- Many network problems can be identified before they become disruptive using a proactive vs. reactive management and monitoring approach.

If remote users and customers can access locally hosted applications and Web sites, managing Internet access is even more critical. External monitoring services, meanwhile, can help provide a clearer view of performance.



“It’s important to actively manage both the wired and wireless network,” Hanselman says. “Wireless capacity planning is challenging.” Accounting for the various devices using the network, radio frequency capacity and coverage, and the wired network supporting the network is necessary. More than the wired world, he says, “wireless sees a more rapid advance in devices and requirements.”

Enterprise Strategy Group senior analyst Bob Laliberte says that, in highly virtualized environments, it’s “important to monitor I/Os, especially if organizations are increasing VM density (10 or more VMs per physical machine). If cloud- or WAN-based, getting some insight into the carrier or service provider’s network may be very important,” he says. Determining key performance areas to concentrate on depends on the environment being supported (video, server virtualization, unified communications,

etc.), Laliberte says. “Clearly [enterprises] need to have a good understanding of available bandwidth, total bandwidth, latency, packet loss, etc., especially for WAN links,” he says.

Gain Visibility

“It’s hard to manage something that you can’t see, so getting visibility will be very important,” Laliberte says. This can require using multiple network management tools. Ideally, network monitoring is “about the applications and services that leverage the network,” Laliberte says.

End-to-end monitoring from application to end user is advantageous, he says. “This would cover the data center network, campus network, and WAN, including carrier networks. For some organizations, it may also involve the cloud (SaaS or IaaS services),” he says. To gain an accurate picture of network performance, consider deploying

intelligent management aggregation networks or network packet brokers to leverage existing management tools more effectively, he says. “Keep in mind that security tools are also vying for SPAN ports, so again, the end-to-end visibility is important,” Laliberte says.


Hanselman says monitoring the network at multiple points can help locate traffic sources and local link capacity issues. “Things as simple as a duplex mismatch on a switch port can cause large impacts on network performance,” he says.

Tools To Use

The first order of business, Hanselman says, should be getting monitoring tools in place and establishing a baseline performance analysis to examine and address specific performance issues. Trend analysis and capacity planning are tasks often crowded out by more urgent, reactive network management tasks, he says. Because

of this, problems such as exhausted WAN capacity can surface as a crisis rather than an anticipated upgrade, he says.

“Wireless network management in general is an area where many SMEs are challenged by the variety of technical aspects that must be mastered to provide solid performance,” he says. Additionally, because most small to midsize enterprises lack resources, it’s tempting to throw bandwidth at performance problems, he says, “but it’s more often more cost-effective to use traffic optimization in some form.”

Beyond network monitoring tools, Laliberte suggests using app-aware tools to obtain complete end-to-end visibility. Depending on the network’s size, a possible cost-effective monitoring approach is using one of many low-cost tools available and eying software that allows downloads for a certain size or limited time, he says. 

Top Tips

- ✓ **Limit access.** Michelle Warren, president of MW Research & Consulting, says whether a company limits access to such sites as Facebook, LinkedIn, YouTube, and Twitter depends on its culture, but IT managers should consider solutions that “help educate users as to which sites are work-related and which ones are personal.”
- ✓ **Look at your traffic.** “Getting a traffic graph that spans at least a week will allow an organization to both understand how network capacity is being used, as well as enabling the detection of network anomalies,” says Eric Hanselman, research director, networking at 451 Research.
- ✓ **Improve performance, manage costs.** Hanselman says WAN or Internet connections are recurring costs and key performance determinants. “Optimizing their performance can . . . manage costs,” he says.

Action Plan

- Establish a baseline for network activity
- Identify and rank applications and user groups most important to the business
- Test existing environments
- Ensure visibility into network environments that support applications and services
- Ensure visibility into carrier, service provider, and cloud networks
- Conduct network analysis to identify potential problems
- Educate users of access concerns and encourage feedback



Get Started

Gaining insight into available and total bandwidth, traffic, latency, packet loss, application- and storage-related performance, and other network performance areas can mean using multiple network analysis and management tools.

451 Research research director Eric Hanselman says a network monitoring system that provides historical performance data can enable planning and troubleshooting. “The ability to look back at network conditions is particularly helpful when dealing with user-reported issues. It’s often worth considering WAN optimization techniques and products to ensure the performance of critical applications,” he says.

Consolidate Your Storage

Reap The Associated Benefits Of Reduced Costs, Better Performance

THE BENEFITS OF UNDERTAKING a storage consolidation project are fairly well known. Beyond reducing security risks and costs, improving performance, and easing management responsibilities, consolidating storage directly addresses the ever-increasing issue of data growing at staggering rates in many enterprises.

Richard Csaplar, senior research analyst at Aberdeen Group, says research from Aberdeen Group points to companies “seeing their data growing at an average yearly rate of 32%. This means corporate data is doubling in size every 2.5 years.”

What does that mean for IT? As Csaplar says, “Data growth and dealing with it are always among the highest pressures being felt by IT managers.” Implementing storage consolidation to ease this stress and realize the associated benefits, however,

isn’t simply a matter of deciding, “OK, let’s do it.” There are numerous risks and complexities to account for first. To help do so, consider the following.

Before You Begin

Understanding what your objectives are in implementing a storage consolidation project is paramount. Greg Schulz, senior advisory consultant for Server and StorageIO Group, says that because there are different aspects to storage consolidation, it’s vital to understand what the application requirements are from a performance, availability, capacity, and cost standpoint. “In other words, what is the driver to do a storage consolidation project?”

Moosa Matariyeh, enterprise storage solution architect at CDW (www.cdw.com), says, “IT professionals sometimes

overlook what the business goals are and how the applications fit into those short- and long-term needs when beginning a consolidation initiative.”

According to Csaplar, “If you really want to deal with the issue, you need to have a strategy.” One form of this is having a corporate ILM (information lifecycle management) process in place to define which data is important, how it should be stored and for how long, and when it can be destroyed.

“These are decisions for the company and should not be made by IT,” Csaplar says. “Without an ILM process, IT won’t know what data is important and what is marginal. You cannot treat all data as the same or you will cost the organization greatly in purchasing too much expensive storage or keeping the data active for too long.”

Key Points

- Pinpointing what your exact storage consolidation goals are is imperative.
- Analyzing the enterprise’s various types of data will help prioritize its importance.
- Post-consolidation monitoring is vital to make certain all changes have a positive impact.

Norm Hutton, director of sales and acquisitions at WeBuyUsedTape.net (800/821-1782; www.webuyusedtape.net), advises enterprises to note the older storage assets the enterprise will no longer need, determine whether there’s resale value that could help fund the current



project, and determine whether there are compliance issues to address first.

Develop A Baseline

By developing a baseline of your current storage environment, it will be possible to make decisions concerning which storage systems you can consolidate from a performance perspective (using SSD drives) or capacity standpoint (various RAID levels, compression, deduplication, archiving, etc.). Schulz says the baseline should include the resources currently existing, such as storage systems; the percentage of space being used; and current performance or activity indicators, such as how much bandwidth and how many high I/Ops are tied to specific applications.

After accessing the environment and considering different options, Schulz says,

you can then implement changes related to any data-movement migration reconfiguration. “This could also involve implementing new technologies, hardware, [or] software, or reconfiguring to support the consolidation environment,” he says.

Afterward, Schulz says, it’s important to measure, monitor, and track how things have changed in pursuit of consolidating storage. For example, have performance bottlenecks been introduced? By assessing the environment early on from a capacity standpoint and looking at latency response times, I/Ops, and bandwidth, he says, decisions can be made to prevent bottlenecks from occurring. Additionally, assessing the changes will indicate if fine-tuning is needed or different or additional hardware and software is required.

Tools Of The Trade

Among the tools and investments enterprises will potentially need to support a storage consolidation effort are those that allow for applying metrics and obtaining measurements in order to make informed decisions to optimize the storage environment. “This means having insight into historical trends and patterns around space capacity usage or utilization, along with performance and activity data, such as response time, I/Ops, and bandwidth, along with availability data,” Schulz says.

Deduplication and compression software is an option for reducing the physical size of data sitting on storage media, Csaplar says, adding that “automated data-tiering software can manage the flow of data from the most expensive to

cheaper storage options, therefore reducing the cost of data storage.”

Virtualization can bring the enterprise’s storage devices under one management umbrella for easier overall control. Additional options, Schulz says, could include I/O consolidation tools, fast SSD storage along with various RAID levels, and real-time thin provisioning with different RAID levels and tiering.

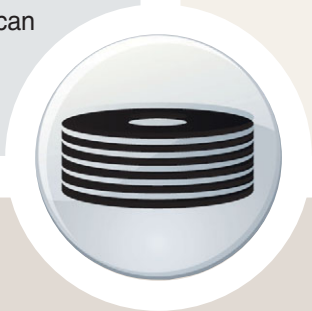
“The biggest obstacles SMEs can face overall are often related to internal organization issues,” Matariyeh says. “For instance, departments can be compartmentalized, and it can be difficult to re-integrate those compartments when you consolidate storage. It can be challenging to bring together the budgets of those compartments as well as the leadership of each department.”

Top Tips

- ✓ **Do a balancing act.** Balancing storage-related performance, availability, and capacity is something IT must keep in perspective, says Greg Schulz, senior advisory consultant for Server and StorageIO Group. “This means in the quest to consolidate storage to reduce cost by driving up utilization, that a performance bottleneck isn’t introduced into the environment,” he says. “Likewise, this means avoiding reducing availability or introducing points of failure in the quest to reduce cost by consolidation.”
- ✓ **Create a cycle.** Richard Csaplar, senior research analyst at Aberdeen Group, advises IT to consider cycling data through a series of tiers. “The latest and most important data is stored on the most reliable and fastest media, and as it ages, it’s moved to slower and less expensive storage devices,” he says. “Finally, when most of it will no longer be needed, it can be archived onto tape or into the cloud.”
- ✓ **Factor in costs.** Beyond costs related to storage devices and media, another consolidation expense is the time required to analyze storage activity, consider consolidation options, and implement the consolidation plan. Expenses can also stem from moving or migrating data, obtaining services, and acquiring management software that resides above the storage devices.
- ✓ **Analyze ROI.** Norm Hutton, director of sales and acquisitions at WeBuyUsedTape.net (800/821-1782; www.webuyusedtape.net), says the consolidation process as a whole should involve an ROI analysis, determining what’s needed to gain approval and how IT can obtain a quote for the value of older storage assets, which the enterprise can apply to the ROI of the new project.

Action Plan

- Collect and analyze the data to consolidate.
- Prioritize the levels at which you’ll protect various data.
- Assess your consolidation options.
- Plan a pilot program.
- Decide if you need to hire a consultant.
- Implement the pilot program.
- Acquire any new tools needed.
- Reconfigure and migrate data.
- Assess your changes and make needed tweaks.



Get Started

Moosa Matariyeh, enterprise storage solution architect at CDW (www.cdw.com), says issues with storage consolidation usually surface from a lack of planning, especially if a project is rushed. “This often occurs because IT professionals feel the burden of the daily needs of their storage environment and might not have the luxury of storage consolidation being their only focus,” Matariyeh says. Before you start the consolidation project, it’s best to develop a plan for how to proceed.

BUYING TIPS:

Used & Refurbished Equipment

✓ Know Your Options For Getting Rid Of Used Equipment

One of the most common methods for getting rid of used equipment is a fire sale, but many data centers will need to be aware of who they are selling to. “A less time-consuming method is to sell to one of the many companies that exist by buying used servers and equipment and refurbishing them,” says Brett Femrite, director of business development for Rackmount Solutions (866/207-6631; www.rackmountsolutions.net). “Bear in mind, often you will receive pennies on the dollar for this equipment, but normally the buyer will pay to pick it up and ship it to their facility and get it off your hands.”

Another option is an asset recovery program, which is a service that performs both the IT asset buyback as well as the physical recycling of hardware. Some vendors will even create a fund for your organization so that the money you gain from selling used hardware can be used to purchase recertified equipment when you need new hardware.

✓ Evaluate Your Data Destruction Options

With an onsite data destruction service, you’ll remove the need to deal with a chain of custody

documentation, which can become a legal burden and add complexity to the job. For data centers that store a lot of sensitive data and want to physically destroy the data, you’ll enjoy the peace of mind that comes with watching the destruction take place. With an onsite data destruction service, the vendor will provide all the equipment necessary to handle your storage equipment.

However, some data destruction services offer more powerful shredders at their facilities than mobile shredder services can offer. So if you want absolute destruction that’s beyond any type of recovery, an offsite data destruction service may be ideal.

A number of offsite data destruction services also double as a reprocessing center that can remarket the parts, so you can get some return value for your used equipment. With such a transaction, reputable data destruction services will record all inventory information and data removal for your auditing and accountability needs. Reselling or reusing the equipment also means that schools, charities, and low-income families will benefit from your old equipment, rather than the simple destruction of the drive.

✓ What Equipment Makes Sense To Buy Used?

Resellers of used and refurbished equipment have access to a wide selection of products, stretching from today’s models to equipment that’s several years old. Enterprises looking for low prices can find great deals on the used market.

But what equipment is a safe bet to buy used? A handful of common items are among those often recommended as good buys on the secondary market:

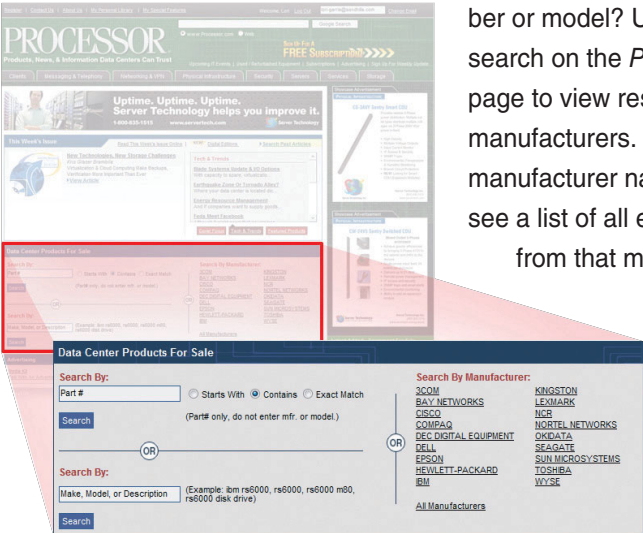
- Networking equipment such as firewalls, routers, and switches. These items are generally easy to incorporate into existing environments, and the amount of product in inventory means that data centers have their pick of models, capabilities, and price points.
- Disk storage is in high demand and enjoys a brisk trade on the secondary market. Buyers looking for something specific shouldn’t have trouble locating their preferred flavor.
- Refurbished servers offer more bang for your buck when compared to buying new. The range of manufacturers and models available through resellers is vast, so buyers are almost certain to find what they need.

Use PROCESSOR.COM To Find DATA CENTER EQUIPMENT

Looking for help pinpointing the products you need, from vendors you can trust? Finding the equipment you need is easy with Processor’s online Data Center Products For Sale Database.

From Processor’s home page (www.processor.com), you can search for a specific part number, make, model, or description. Enter the information in the appropriate box and click Search. You’ll see a list of available equipment. If you don’t see the particular piece you’re looking for, scroll to the bottom of the search results page to conduct a more detailed search. There, you can search by part number, model, price, location, and more.

Don’t know the specific part number or model? Use the drill-down search on the Processor home page to view results from specific manufacturers. Simply click the manufacturer name, and you’ll see a list of all equipment listings from that manufacturer.



Do you have excess equipment?
Post it for sale on Processor.com!

On the Processor.com home page,
click Used/Refurbished Equipment.



Choose
Post A Free
For-Sale Listing.

- Search For-Sale Listings
- Find Vendors
- Post A Free Want-To-Buy
- Post A Free For-Sale Listing
- View Want To Buys

Follow the on-screen directions from there!

BUYING TIPS:

Fire Protection



IN AN INSTANT, a data center fire can devastate a business. Beyond downtime, there’s equipment damage, escalating insurance rates, and other related costs to deal with—hence the need for fire protection and suppression systems. Here’s what you need to know when selecting a fire protection system for your data center.

✓ *Understand The Basics*

Chris Jelenewicz, P.E., engineering program manager at the Society of Fire Protection Engineers, says there are several factors to consider when installing fire protection systems, including the building’s structure, occupants, first responders, and equipment. Jelenewicz says both active fire systems (sprinkler, gaseous, alarm and communications, smoke management, etc.) and passive fire systems (fire doors, walls, etc.) are necessary to adequately protect people, property, and structures. What’s important, he says, is that both system types “should be designed so that they work together as one complete fire protection system.”


Melanie Davy, analyst at Info-Tech Research Group, says at a minimum, a data center must have a sprinkler system, fire detection and alarm components, portable fire extinguishers, and emergency power-off abilities (according to NFPA 75). Other forms of protection, such as clean-agent suppression systems, are classified as add-ons.

✓ *Understand Water & Non-Water Options*

Fire protection is generally broken down into water and non-water options. The obvious downside to using a sprinkler system is that electronic devices and water can be a bad combination, especially in situations that are started by electrical fires. Thus, most data centers opt to go with a clean agent or aerosol agent suppression system, which is designed to leave no residue and is safe for both electronics and people, unlike some chemical-based fire protection.

✓ *Know Your Alert Choices*

Regardless of which type of suppressant you select, you’ll need to know at what stage during a fire the detection system should trigger the suppressant to release. Effective detection is key, as the suppression system is only as good as the detection system initiating the release.

You’ll need to invest in a smoke and fire detection system that can alert employees and IT staff to problems. Some models are capable of detecting the various stages of a fire, such as visible smoke vs. flaming fire vs. intense heat, to allow you to set off alarms or activate various stages of fire protection. 

BUYERS’ CHECKLIST

- ✓ Find a smoke/fire detection system that meets the needs of your data center, in terms of stages of fire protection and number of physical detection locations.
- ✓ Research the various clean agent suppression options and make sure your sprinkler system is capable of working with the clean agent suppression system.
- ✓ Invest in an emergency power off system to shut off electricity when a fire is detected.

KEY TERMS

Aerosol agent.

A type of fire suppressant system that leaves little residue and won’t damage equipment. Although aerosol agents require a contained space, a sealed air-tight space is not required as the agent does not pressurize the protected area when discharged.

Agent storage container.

The assembly or unit that stores the clean agent fire suppression liquid until it needs to be released when prompted by the suppression control panel.

Class C.

Fire breakouts that involve electrical equipment where a non-conductive extinguishing agent must be used.

Clean agent.

A type of fire suppression system that leaves no traces behind.

Deluge.

A system where all the sprinklers connected to the water piping system are open. If the deluge valve opens due to a signal, the entire area will be sprayed with water.

Early warning smoke detector.

A passive detector that uses ionization and photoelectric sensors.

Heat detector.

A unit that sends a response when the convection of thermal energy changes the temperature of the device’s heat-sensitive element.

Suppression control panel.

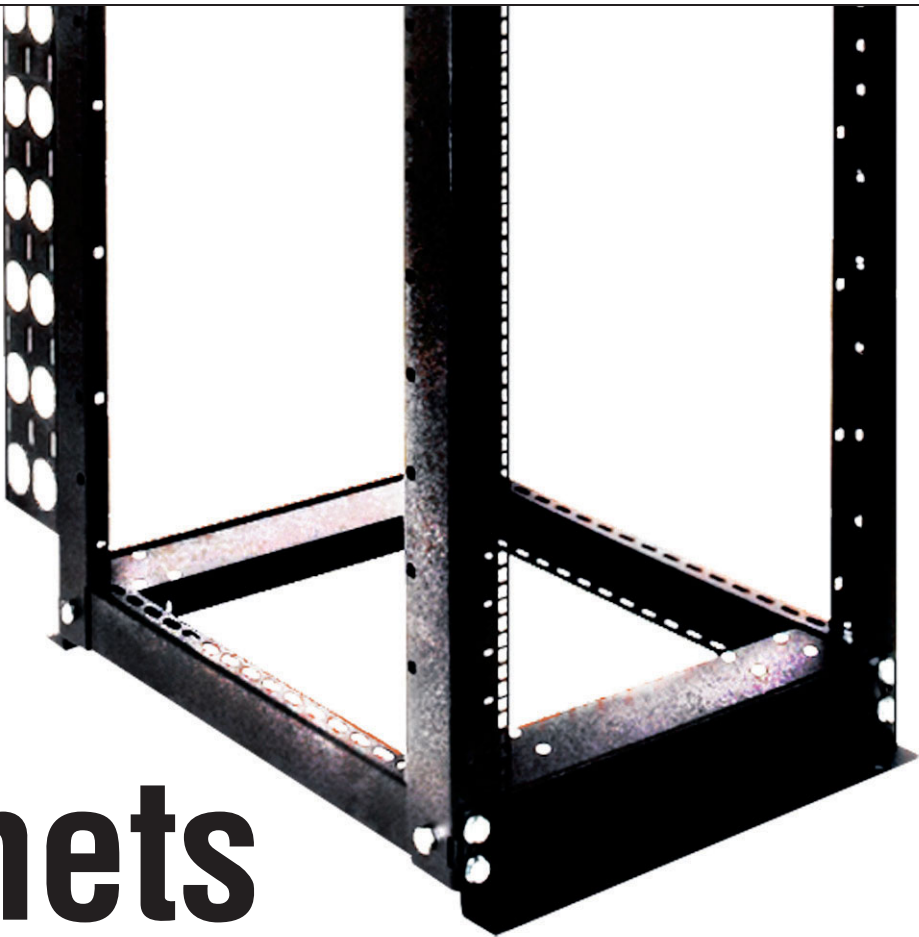
The unit that houses the interface you use to control the fire protection system.

Very early warning smoke detector.

A smoke detector that samples air particles via aspiration to find non-visible smoke.

BUYING TIPS:

Data Center Racks & Cabinets



RACKS AND CABINETS are built to hold and protect every piece of equipment that runs your data center. Because of that, the decision of which racks and cabinets to purchase shouldn't be hastily made. Instead, you should focus on the features most important to your company and ensure they will fulfill your needs for years to come.

✓ *Know What's Currently On The Market*

The first thing you should do when looking at racks and cabinets is research what's currently on the market. Companies offer full-sized 42U, mid-sized 26U, and 12U cabinets as well as racks with heights of 30 to 84 inches and widths of 24 to 36 inches. Eli E. Hertz, CEO and president of Hergo (888/222-7270; www.hergo.com), says you should look for potential add-on items, such as overhead storage compartments, power and cable management solutions, and back and side panels. Different sized racks and cabinets paired with additional solutions can help you design a product that's perfect for your data center.

✓ *Pinpoint Your Needs*

Once you know what products and configurations are available, look at the types of physical features you need for your specific environmental needs. "Establish what you need the cabinet to do," says Susan Wynne, senior sourcing specialist for Rackmount Solutions (866/207-6631; www.rackmountsolutions.net). "If the equipment is noisy, you may want a sound reduction cabinet. If the environment is dirty, you may need a filtered cabinet. Even the area of the country is important and you may need an air-conditioned or NEBS cabinet."

There are many other considerations you must make, including whether you have a sprinkler-based fire suppression system that requires NEMA 12 certified cabinets that keep out moisture, Wynne says. You should also consider built-in security measures, such as locked cages or other alternatives, if there is a lot of traffic in and out of your data center.

✓ *Check The Vendor*

Hertz says that a cabinet or rack purchase is significant and so the decision of which vendor to buy from is just as important. "You need to make sure that the supplier they have chosen has been in business long enough to have an established reputation in the market," he says.

Hertz says companies should be able to "grill the supplier on what they are actually going to be getting," and the vendor should be able to answer those questions by knowing "the product from nuts to bolts." Think of the vendor as a partner in the purchasing process and make sure it gives you enough information to make the best possible decision.

✓ *Get The Right Fit*

In most cases, you've already decided which pieces of equipment to buy for your data center before you start shopping for the racks and cabinets to store them in. It's a great opportunity to measure each piece and come up with a mock configuration for how it will fit into the rack or cabinet.

"This ensures the cabinet is tall enough, wide enough, and deep enough to handle the longest piece of equipment to be populated into the cabinet," Wynne says. But don't let internal space be your only focus, because the amount of space the rack or cabinet takes up is equally important. "Make sure the outside dimensions of the cabinet will fit in the designated location," she says. Whether you are purchasing multiple racks and cabinets to fill a brand new data center or buying one to fit into an existing setup, it's important to know every dimension. And make sure you leave adequate space for expansion in the future. If you don't, you could get stuck with a cramped and inefficient data center with no room for evolution. P

BUYERS' CHECKLIST

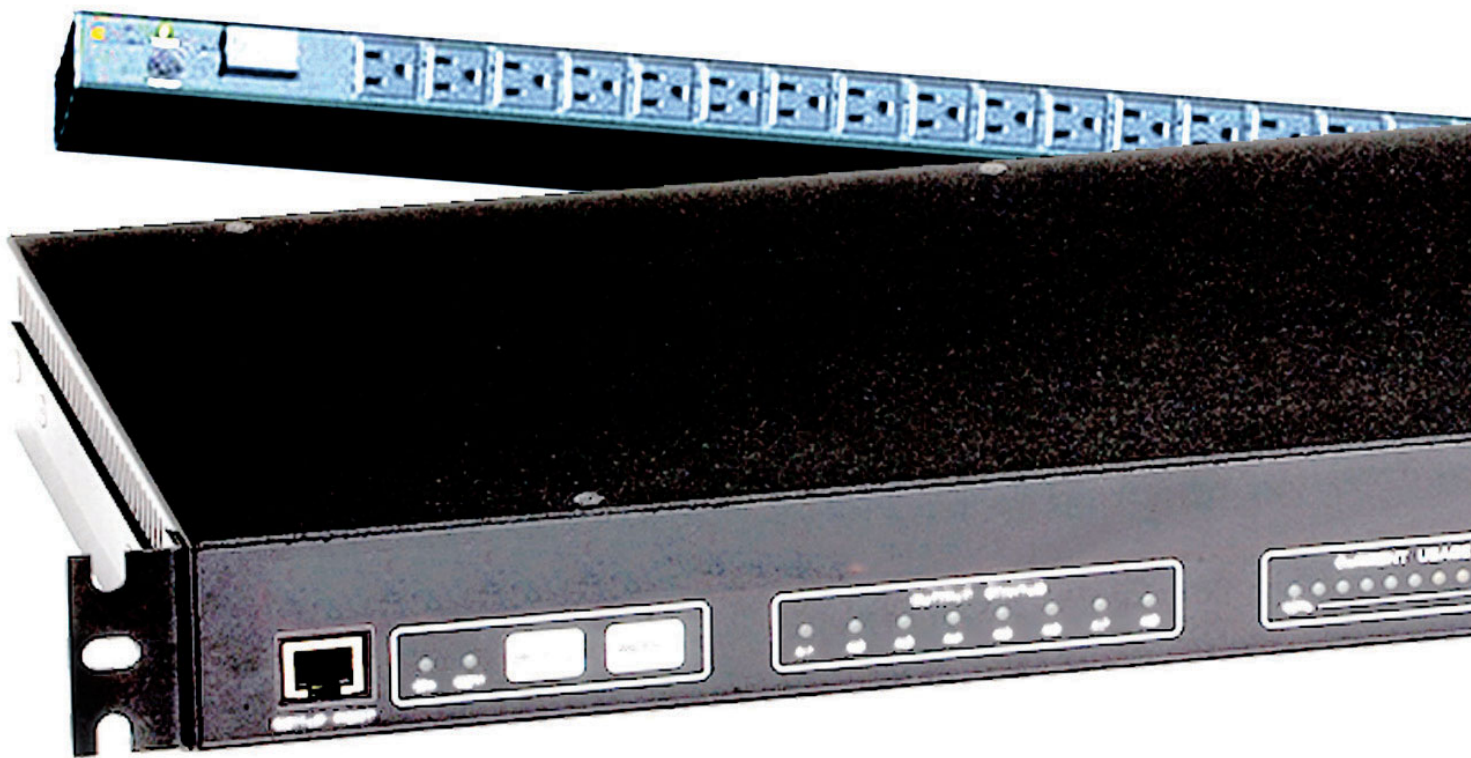
- ✓ Is cable management built in, or does the rack or cabinet leave adequate space to neatly route cables?
- ✓ Does the rack/cabinet provide PDU mounting options?
- ✓ Does the cabinet include PDU mounting brackets?
- ✓ Does the equipment you're mounting require tapped or M6 holes?
- ✓ Will you need to disassemble the rack/cabinet to get it in the room?
- ✓ Is the cabinet lockable to prevent potential security issues?

KEY TERMS

- M6 holes.**
Square holes common with rackmount equipment and server cabinets; they can be adjusted to a round hole with a cage nut.
- Rackmount units (RMU).**
Cabinets and racks are measured in rackmount units, with each RMU, or U, equivalent to 1.75 inches.

BUYING TIPS:

UPSes



THE IMPORTANCE OF UPSes can't be overstated. If power outages occur and the data center doesn't have UPSes in place that can meet necessary power requirements, the result will be potentially business-crippling downtime.

✓ *Learn Your Total Load, Maximum Runtime & More*

Narrowing down what you need in UPSes can be difficult, and the number of options available can complicate matters. "You have to start with some basics and be armed with some knowledge before making a selection," says Brett Femrite, director of business development at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net).

Know the total load of all equipment you'll connect to the UPS, the minimum time UPS batteries must provide power, and the maximum runtime needed. "You'll also need to know the voltage of the electrical service that will power the UPS," he says.

✓ *Check For Efficiency Ratings*

Jim Hall, marketing manager at Staco Energy Products (866/261-1191; www.stacoenergy.com), advises obtaining UPSes that provide an overall efficiency rating of 95% or greater, input power factor greater than 99%, and input distortion factor of 3% or less. Also consider models with multiple operation modes that are generator-friendly and that support hot system expansion, which allows parallel UPS additions without going

to maintenance bypass, resulting in continuous protection of the loads.

✓ *Calculate TCO*

Make low TCO a priority, Hall says. "This includes batteries and other auxiliary hardware. The considerations are initial cost to acquire, install, operate, and maintain the equipment." UPS maintenance (in-house or outsourced) is also a significant portion of TCO, he says. Backup batteries that need replacement form the main factor affecting a UPS TCO figure, he says. Pay attention to battery types, longevity, quantity, and automatic testing.

✓ *Know The Features & Options*

The UPS features your enterprise needs can depend greatly on the protection level required for given applications. Femrite says that although it's desirable to have a UPS with a high efficiency rating, external bypass switches that enable power to bypass the UPS for maintenance purposes, monitoring capabilities (local and remote), warranties (system, batteries, etc.) and high-performance filtering, "they may not all be needed or cost-effective."


Hall says three-phase online double conversion UPSes (convert AC to DC power and back to AC) offer the best overall value while providing conditioned power to IT loads. Such systems isolate the load from the primary AC line, preventing noise, sags, and swells from reaching the load. Also consider UPSes with high-performance filtering (protects upstream power sources from harmonics

and reactive power), dual input for main and secondary emergency standby power (increases resilience of both single and parallel configurations), and IGBT (insulate-gate bipolar transistors) and DSP (digital signal processors) that provide for a true online double conversion UPS system, Hall says.

✓ *Monitor Battery Power*

Batteries, Halls says, are the leading cause of power interruptions, both as primary emergency power backup and as the source of crossover power for starting backup generators. Batteries degrade with age, he says, even when not experiencing lots of discharge cycles. If minimum runtime is critical, select a battery that provides a cushion so that after several years minimum, runtimes are still achievable, he says.

Ensure the UPS is properly sized to handle transient loads that might occur when utility sources aren't available. "While a UPS can handle significant momentary overloads using the bypass, this capability is not available when running on battery power," Hall says. Enterprises often buy UPSes sized too close to the average load power and don't take transient loads into account, he says.

Also, Hall says, federal law requires that all used lead acid batteries be managed as universal waste. "For this reason alone, facilities with lead acid valve regulated or wet cell/flooded batteries should consider hiring approved firms to handle all battery installations, maintenance, and disposal," Hall says. 

BUYERS' CHECKLIST

- ✓ Determine your power and protection requirements
- ✓ Ensure the UPS can handle required loads
- ✓ Make certain the UPS provides sufficient runtime and capacity
- ✓ Consider outsourcing battery installation, maintenance, and disposal duties
- ✓ Determine warranty, insurance, and guarantee requirements

KEY TERMS

Line-interactive.

A UPS with built-in line-sensing abilities to regulate high- and low-voltage levels; an inverter activates when power loss occurs and the system switches to battery power.

Online.

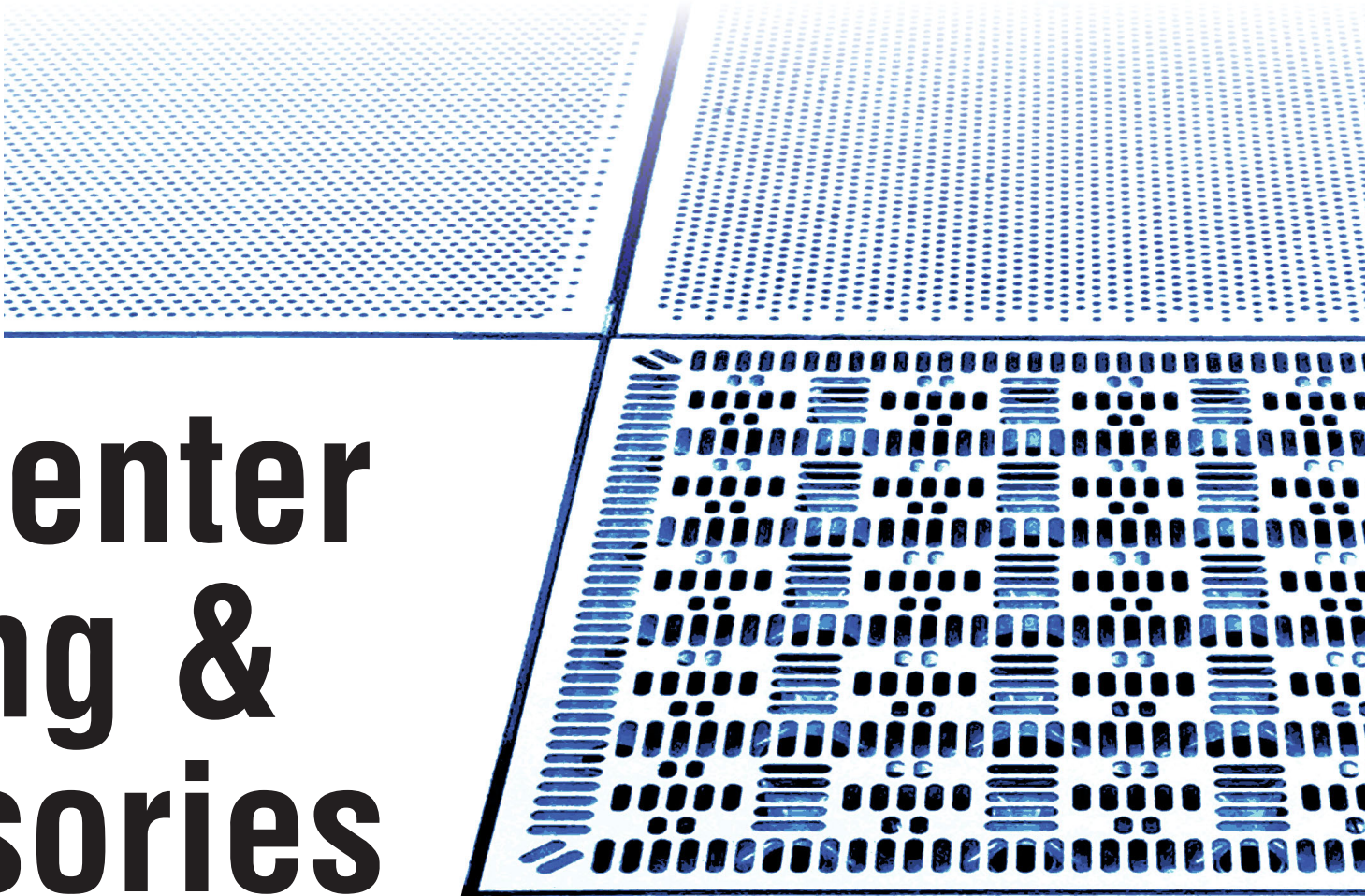
A UPS type providing the highest protection level; the inverter is online and operates constantly to eliminate incoming surges and low- and high-voltage issues while delivering clean power.

Standby.

A UPS type that runs power through surge suppression to connected equipment; after a power outage, the UPS switches to battery backup power, reverting to AC power when power returns.

BUYING TIPS:

Data Center Flooring & Accessories



YOUR DATA CENTER’S FLOORING can be just as important as the servers and other equipment it holds. Choosing the right flooring provides a stable, efficiently cooled data center. Here’s what to look for.

✓ *Know The Weight*

Raised floor tiles come in different weight capacities, so consider your weight-bearing requirements when selecting tiles, says Ken Koty, sales engineer at PDU Cables (866/631-4238; www.pducables.com). The final floor has to be strong enough to support your

equipment at the height of the raised floor. Also be aware of rolling load and use heavy-duty floor tiles where you will be moving equipment in and out of the data center.

Remember as rack sizes grow and densities increase, your floor tiles may need to support a greater weight than you have today. Plan ahead and install floor tiles to meet current and future needs, Koty says.

✓ *Check The Finish & Material*

Be careful when selecting the floor finish, Koty says. “You don’t want be

constantly replacing tiles in high-traffic areas to keep the floor looking uniform.”

Avoid floor tiles wrapped in galvanized metal, Koty says, as the galvanized-wrapped tiles could cause zinc whiskers over time. And, if you are using cement-filled tiles, use a sealant to coat any cut edges of your tiles.

You’ll also need to consider static dissipation and material weight, says Laura Viars, senior sourcing specialist at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net). “Data center flooring needs to have a surface that is conducive of static dissipation,” she says, to prevent the build-up of static electricity. In addition, she says, “lightweight solutions, as well as ‘lay-down’ panels rather than bolt-down ones, can make maintenance or swaps significantly easier.”

BUYERS’ CHECKLIST

- ✓ Do the flooring panels fit your needs and allow for effective cable management?
- ✓ Is there enough open space underneath the floor for cable routing and cooling?
- ✓ Does your vendor have a stellar reputation and testimonials from past clients?
- ✓ Are all sections of the data center flooring capable of handling the weight and traffic to which they will be subjected?

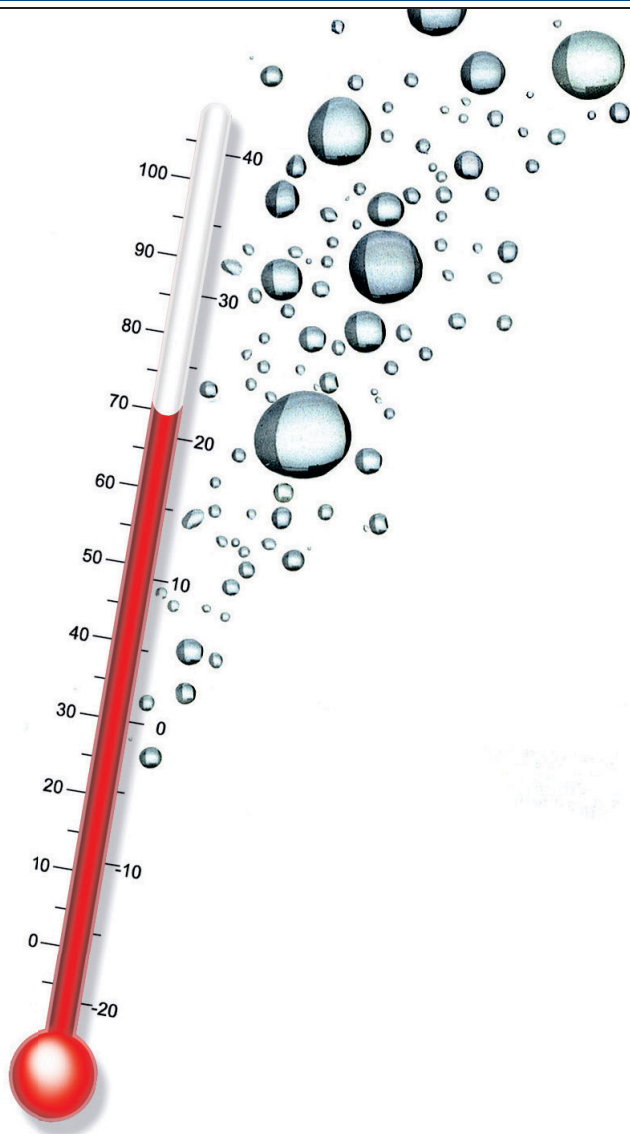
KEY TERMS

- Bypass airflow.**
Conditioned air that does not reach computer equipment. Unintended bypass airflow can occur by escaping through cable cut-outs, holes under cabinets, misplaced perforated tiles, or holes in perimeter walls.
- Concentrated load rating (also referred to as static load).**
Rating specified in pounds force applied over a one square inch area.
- Directional airflow.**
Airflow panels such as perfs and grates that deliver air directly to the face of the rack.
- Panel.**
The material that makes up the walking surface of a raised floor. Depending on your weight and traffic needs, the panel may be made from steel, concrete with steel reinforcing bars, or aluminum.
- Rolling load.**
Dynamic (varying) loads that are usually created by moving equipment on casters over the raised floor.

- ✓ *Be Aware Of Cooling & Height*
- If you can maximize the available space underneath the floor, you can increase your data center’s overall cooling efficiency. Also, Koty says, if you want your new flooring to accommodate a hot/cold aisle configuration, make sure to plan your under floor cable layout according to CRAC and PDU/RPP unit locations.
- ✓ *Plan For Cutouts*
- When installing flooring, a master floor plan should show the location of all cabinets in the full build-out state, says Lars Strong, senior engineer at Upsite Technologies (888/982-7800; www.upsite.com).
- Using this plan, it’s best to cut cable openings in floor tiles and install products that seal those openings as the floor is installed. Doing so will reduce labor, prevent contamination, and ensure that every cable opening is sealed. “If this best practice is not followed, then it is less likely that the ultimate goals of providing the most reliable and efficient environment, the highest possible power density, and lowest operating cost can be achieved,” he says.
- ✓ *Don’t Cut Corners*
- You may be tempted to cut corners to save money, but don’t, Viars says. “Don’t compromise on the integrity of your flooring. Make sure floor panels fit together as intended (even if it requires custom cutting/sizing), and spring for the additional airflow management accessories. It might cost a bit more upfront, but it will ensure that your cooling remains effective.”

BUYING TIPS:

Environmental Monitoring Equipment



ENVIRONMENTAL MONITORING offerings are not things an enterprise invests in on a whim. Every organization has unique infrastructure limitations, climate issues, and monitoring needs, so there’s no one-size-fits-all solution. Here’s what to look for.

✓ *Define Your Goals*

Jim Fink, consultant at Upsite (888/982-7800; www.upsite.com), says you need to first define your goals in implementing a monitoring system, including whether you’ll be using it for troubleshooting, efficiency benchmarking and goal tracking, trend analysis, forensic analysis, or other issues. “Decide which parameter must be monitored (pressure, temperature, humidity, etc.) and understand the installation and IT burden on your organization. How many IP addresses, how many monitoring points, and how much network traffic will be created? Will you use wireless or wired sensors? How will the data be presented?”

Laura Viars, senior sourcing specialist at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net), says you also need to know what types of threats might occur. “The most common environmental risk is excessive heat within the cabinets, so you’ll definitely want to make sure you are monitoring temperature,” she says. Other potential environmental dangers include power surges/loss of power, humidity, smoke, airflow, and room/cabinet entry.

✓ *Understand What’s Available*

With so many choices, it’s tough to know where to start. Harry Schechter, founder and CEO of Temperature@lert (866/524-3540; www.temperaturealert.com), says ease of use and reliability are the two most important features to look for. “Choose a product that provides just the features you need, and this will ensure you’re getting something that will be intuitive to set up,” he says.

When it comes to connecting monitoring equipment to the network so that it can send alerts, several options exist, Schechter says. USB, Wi-Fi, and Ethernet remain popular, but there are also newer infrastructure-independent devices based on cellular phone connections.

A state-of-the-art environmental monitoring system is nothing without notifications. Bob Douglass, vice president of sales and

marketing at Sensaphone (877/373-2700; www.sensaphone.com), says, “The primary motivation for adding an environmental monitoring system is to know when you have a problem as soon as possible.” Common notification options include email, LEDs, audible alarms, beacons, sirens, Web alerts, SNMP, automated phone calls, and SMS.

✓ *Ensure Ample Coverage*

Consider the room size and amount of equipment to be monitored and plan the number and placement of sensors accordingly. “If your deployment is small, a few points of measurement may suffice, but if you have a large operation, you may require environmental measurements every few feet,” says Brandon Siri, senior marketing representative at Server Technology (800/835-1515; www.servertech.com).

Also make sure you get all the components to complete the system, Viars says. “Most systems have a main console, and in addition to that, you’ll need to purchase various sensors based on what you are looking to monitor specifically.” Some sensors might require a power source, so consider that when planning your layout.

✓ *Consider Long-Term Support*

Choosing the right solution means little if you don’t have long-term support. “Look beyond the checklist and make sure that you’re getting future enhancements, that you have access to support, and that the company stands behind its products” says Michael Sigourney, senior product specialist at AVTECH (888/220-6700; www.avtech.com). P

BUYERS’ CHECKLIST

- ✓ Do you need to monitor remote or local systems?
- ✓ Do you have wired networking or power limitations?
- ✓ What kinds of notifications do you need?
- ✓ Do you have other monitoring needs beyond environmental?
- ✓ How many and what types of sensors do you need?

KEY TERMS

- Dry contact.**
Refers to an electrical contact that has no internally available voltage.
- SEMS (Server Environmental Monitoring System).**
Records and reports the environmental conditions of servers and clients.
- SNMP (Simple Network Management Protocol).**
A network protocol that lets users monitor network availability and performance in addition to a variety of other devices such as power and cooling systems.

BUYING TIPS:

Cable Management Solutions



MANAGING CABLES is an afterthought. That’s an unfortunate reality among many data centers, says Ken Koty, sales engineer at PDU Cables (866/631-4238; www.pducables.com). Among other things, not having a cable-management plan and guidelines makes troubleshooting problematic.

✓ **Know What’s Available**

Brett Femrite, sales manager at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net), says well-designed patch cable storage managers, which house and cover patch cords between patch panels and devices, are popular. He says they are not only functional in helping reduce cable sprawl, but they are also bend-radius-compliant and offer cosmetic appeal. Other cable management options include horizontal and vertical wire managers (which can be mounted on the front or rear of your equipment rack or cabinet), cable ladders, a large assortment of cable trays and conduits, and various wire minders (rings) that can be mounted on any rack system.

Also very popular, Femrite says, are vertical and horizontal lacer bars. “These bars can be mounted on a rack or within a cabinet and have slots through which Velcro enclosures or cable wraps are routed to hold groups of cable,” he says.

✓ **Plan For Expansion**

Laura Viars, senior sourcing specialist at Rackmount Solutions, says if you intend to incorporate more equipment in the future, ensure your cable management configuration allows for it. Do this by making certain managers (both in-rack cable managers and external trays and ladders or conduits) don’t meet or exceed their fill capacities. Most management options are available in multiple sizes, she says, ensuring a fit with plenty of excess if needed.

Also seek solutions with the flexibility to add new equipment or troubleshoot an existing component. “Lean toward reusable options such as Velcro straps in lieu of cable ties and managers that allow easy access to their contents,” she says. Have an idea of when you’re looking to expand and by how much. If you expect rapid and near-term growth, keep cables loosely organized during implementation by cutting down on the bundling and by using managers (D-rings vs. managers with covers) offering easier access.

✓ **Check Vendor Experience, Warranties & Other Factors**

Because cable management systems affect a range of data center infrastructure subsystems, including airflow management and mechanical and electrical distribution, Lars Strong, senior engineer at Upsite Technologies (888/982-7800; www.upsite.com), says a vendor needs to have comprehensive knowledge of data center operations.

Vendors should have experience that matches your business size and type, warranty products and work, offer easy ordering, provide complete solutions and knowledge concerning network configurations, carry parts that fit into your existing

systems, and guarantee installation and network performance.

✓ **Consider Color & Labeling**

Koty says when possible, use color coding to help visually identify cables quickly, simplify management, and save time when tracing cables. With data cables, use color to identify the cable’s role/function or connection type. With power cables, use color to identify and organize dual-power feeds for redundant power sources.

Secure labels so they’re accessible but difficult to remove. Also, maintain a spreadsheet that identifies the cables and colors, where cables come from and go, and configurations. **P**

BUYERS’ CHECKLIST

- ✓ **The basics.** Laura Viars, senior sourcing specialist at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net), says no matter the size of installation planned, you’ll likely need basic management items such as vertical managers to bundle cable along the height of the racks/cabinets; horizontal managers to bring the cabling neatly from the drop to the equipment; and Velcro straps to bundle cables as needed.
- ✓ **Testing.** Pre-test all cable before installing, says Ken Koty, sales engineer at PDU Cables (866/631-4238; www.pducables.com). Once installed, it’s more difficult to test and identify problems.
- ✓ **Think about heating and cooling.** Where heating and cooling efficiency are concerned, Koty says, using overhead racking for network and storage cables will prevent air dams from forming under the floor. Also, be sure your cable management solution keeps cabling out of the way of exhaust fans in cabinets, he says.

KEY TERMS

- Cable bend radius.**
The minimum radius a cable can acceptably bend and still function as intended.
- TIA/EIA.**
The TIA (Telecommunications Industry Association) and EIA (Electronic Industries Alliance) provide best practice guidelines regarding cabling infrastructure.

BUYING TIPS: Security

YOU’VE WORKED HARD to build your business up to where it is today, and it’s safe to assume that you’d like to keep it that way. But one major security intrusion can put all of your success in jeopardy. With so many security solutions available on the market, it can be difficult to choose the right ones. Here is some advice on what every enterprise needs.

✓ *Start With Network Access Control*

A network access control solution will limit unnecessary access to your company’s internal resources. If you can prevent outsiders from connecting to your network, then there is a much smaller chance of a security breach. Network access control systems can also be used to monitor the mobile device connections of employees working outside the company. Smartphones and tablets are becoming popular targets for hackers, so checking to make sure the external connection is safe and secure will go a long way toward preventing a potential intrusion.

✓ *Move Up To Unified Threat Management*

A UTM solution goes a bit beyond network access control by essentially creating a gateway through which all users and data has to pass before it lands on your company’s internal infrastructure. UTM combines intrusion prevention, antivirus, antispam, and many other features into one solution designed to protect your company.

✓ *Don’t Forget Email Security & Encryption*

Receiving malware-filled messages can result in the infection of one computer or the infrastructure of the entire company. And sending messages with sensitive information no matter what the reason is always a dangerous proposition. As one of the most basic measures, every company should have some form of encryption attached to its email systems. Encryption helps ensure that even if an email is intercepted, it is less likely that a hacker will be able to mine anything from it.

Along with encryption, strong antivirus protection is “absolutely critical” to protecting servers and endpoints against malicious code and viruses, say Von Williams, director of information security, audit, and compliance at Logicalis (866/456-4422; www.us.logicalis.com). To that end, install antivirus software that automatically downloads and deploys signature files all the way to the endpoints, he says. Additionally, he suggests installing an application that checks and downloads

available security patches and installs applicable patches on servers.

✓ *Add In Data Loss Protection*

An enterprise DLP (data loss prevention) solution can “offer a lot of capability in terms of preventing the egress of data,” says James Quin, lead analyst at Info-Tech Research Group. Such solutions can be expensive, so finding existing tools with DLP capabilities (up-to-date network perimeter UTMs and comprehensive endpoint anti-malware packages) can “deliver at least a moderate level of protection without the excessive cost,” he says.

✓ *Check For Updates & Upgrades*

Once you’ve purchased and installed your security solutions, the best way to protect your security investments is to regularly update them with free releases and consider upgrading to new versions of the software whenever possible.

Check to see if your security vendor will set up a long-term upgrade plan that will help cut down on costs. As long as it’s financially feasible and provides new functionality, updates and upgrades are great ways to lengthen the life of your security solutions. **P**

BUYERS’ CHECKLIST

- ✓ Does the solution allow you to limit access to the network and block unwanted connections?
- ✓ Can the solution provide a perimeter defense that prevents threats from landing on your servers and other internal equipment?
- ✓ Emails make it easy to infect computers with viruses and send out sensitive data to hackers, so you should invest in a strong email encryption solution.
- ✓ Will the vendor help you set up an update and upgrade plan that will let you keep your security solutions up to date without breaking your budget?

KEY TERMS

Mail transfer agent (MTA).

A solution that catches and checks incoming email for threats before transferring it to your internal email platform.

Network access control.

A solution that helps you limit access to your network and lower the chance of an infiltration.

Unified threat management (UTM).

Software (often installed on a managed appliance) that seeks to comprehensively block malware and network threats through features such as a firewall, antivirus, antispam, intrusion prevention, VPN, access policy enforcement, and more.



BUYING TIPS:

Equipment Recycling & Disposal



THERE COMES A TIME WHEN enterprise equipment becomes outdated, needs to be replaced, or is simply no longer of use. Such situations require getting rid of the old to make room for the new. One option for dealing with old equipment is reusing it in another capacity, such as repurposing a once high-end server for an application that doesn't demand mission-critical performance. Another option is using a vendor that specializes in refurbishing, recycling, and disposing of old equipment.

In addition to handling equipment in an environmentally responsible manner, a vendor can ensure you abide by privacy and compli-ancy regulations. When it comes time for you to find an equipment recycling and disposal vendor, the following advice can help.

✓ *Brokers vs. Service Providers*

When comparing vendors, know that there's a difference between providers of recycling and disposal services and brokers. "Most companies represent themselves as the actual recycler or disposal company," but many are brokers that only sell products to others without touching the products, says Norm Hutton, head of sales and acquisitions at WeBuyUsedTape.net (800/821-1782;

www.webuyusedtape.net) This increases security risks and lowers the return on your surplus assets. By using a vendor that actually provides the service, Hutton says, you can expect high return, not just another added layer of costs.

✓ *Check For Qualifications*

Selecting a trustworthy vendor is a must. Hutton says to be sure a vendor is reputable and stable. Has the vendor been around a while? Can it provide references within your industry? Does it answer all questions and concerns? Will it provide documentation up front? Is the vendor compliant with poli-cies and government regulations pertaining to your industry? What type and amount of insurance can it provide?

✓ *Check The Facilities & Processes*

Ask prospective vendors if you can physi-cally inspect their facilities, what security and surveillance they use, how they can assist with ROI for current projects, and what docu-mentation processes they use.

Be sure to find out how equipment is picked up and handled, who pays for

shipping and transport, how equipment is processed and how long it takes, where equip-ment winds up, when you will get paid, and if the vendor can assist in other ways such as providing new products or offering credit from old equipment. You also should check what current accounts the vendor has and if it uses downstream vendors and who they are.

✓ *Onsite Or Offsite Destruction?*

With data destruction, you have two choices: onsite or offsite. With an onsite service, you'll remove the need to deal with a chain of custody documentation. For data centers that store a lot of sensitive data and want to physically destroy the data, you'll enjoy the peace of mind that comes with watching the destruction take place.

If you want absolute destruction that's beyond any type of recovery, an offsite data destruction service may be ideal as serv-ice providers typically have more power-ful shredders at their facilities than mobile shredder services can offer, plus a number of offsite data destruction services also dou-ble as a reprocessing center that can remar-ket the parts, so you can get some return value for your used equipment. P

KEY TERMS

Data wiping.

A process used for compliancy and pri-vacy reasons in which data is entirely destroyed or erased from equipment such as hard drives.

Refurbished for reuse.

Old equipment that has been restored to be resold or donated for continued use rather than recycling individual components.

BUYERS' CHECKLIST

- ✓ **Homework.** Compile a list of equipment you no longer need, then determine its resale value, what businesses might purchase the equipment, and how the resale value can help fund new purchases.
- ✓ **Qualifications.** Determine how long the prospective vendor has been in business, what its reputation is in the industry, and what compliancy and certification measures it operates by and has achieved.
- ✓ **Broker or provider.** Determine if the vendor actually provides recy-cling and disposal services or is just a broker of such services.
- ✓ **Process.** Clarify the methods the vendor uses to process equip-ment, including who handles equipment, where it goes, how long processing takes, and what documentation you can expect.


Processor Solutions Directory

Here are brief snapshots of several companies offering products designed for the data center and IT industry. Listings are sorted by category, making it easy for you to find and compare companies offering the products and services you need.

You can find more detailed information on these companies and the products they offer inside this issue.

To list your company and products, call (800) 247-4880.

PHYSICAL INFRASTRUCTURE



Founded in 1995, Austin Hughes Electronics Ltd is a design and manufacturing group that offers a broad range of solutions based around 19 inch rack mount technology. With a wealth of experience Austin Hughes design and development teams are focused to rapidly transform customer requirements and market trends into saleable solutions.

Products Sold:

- Infra solution Cabinet Smartcard Handels
- InfraPower Cabinet Intelligent PDUs
- CyberView Rackmount KVM & LCD Console Drawer
- Environmental Sensors

(510) 794-2888 | www.Austin-Hughes.com

PHYSICAL INFRASTRUCTURE




Based in New York City, Hergo Ergonomic Support Systems is an independent designer and manufacturer of enclosure cabinet solutions, technical computer furniture, and modular racking systems. The company's products are designed to promote organization in the workspace and to increase the productivity of computers, peripherals, and communications equipment. Hergo is known for its high-quality products and superior customer service.

Products Sold:

- Racks
- Enclosures/cabinets
- Motorized workstations
- Flat-panel arms
- Computer desks
- Cable management
- Power management

(888) 222-7270 | www.hergo.com

PHYSICAL INFRASTRUCTURE



Upsite, the “Pioneering Company in Airflow Management Solutions” was founded by Ken Brill, who established the Uptime Institute, a think tank dedicated to identifying efficiencies within data centers. Upsite’s LOK Family of energy-efficient solutions are engineered to optimize the data center. This sets Upsite apart. Upsite solutions empower data center managers to leverage cost savings for data center optimization (i.e. releasing stranded capacity, increasing server density, improving system reliability & reducing energy consumption).

Products Sold:

- KoldLok
- AisleLok
- HotLok
- EnergyLok

(505) 798-0200 or (888) 982-7800 | www.upsite.com

PHYSICAL INFRASTRUCTURE



LANSTAR is a worldwide supplier and manufacturer of durable and innovative Technical furniture. All LANSTAR systems are expertly engineered to be interchangeable providing unparalleled flexibility and value. Our Professional staff, with a consultative sales approach, has been designing and providing solutions that are space effective and increase efficiency in the network environment. Let LANSTAR customize your system to fit virtually any need.

Products sold:

- Computer cabinets
- Rackmount cabinets
- LAN racks
- KVM switching
- USB port blockers
- Raised flooring
- PDU's
- AV swithces

(800) 474-3947 | www.lanstar.com

PHYSICAL INFRASTRUCTURE



The Mestex division of Mestek is comprised of seven company brand names: Applied Air, LJ Wing, Aztec, Alton, Temprite, Koldwave, and Sierra. Mestex is involved in emerging technology and product research focused on using energy and water more efficiently, including ways to improve data center efficiency by using outside air, evaporative cooling, and optimized DDC control schemes.

Products Sold:

- Mechanical and evaporative cooling products
- Heating products
- Outside air tempering products
- Packaged evaporative cooling solutions for mission-critical applications

(214) 819-5262 | www.mestex.com

PHYSICAL INFRASTRUCTURE



RackSolutions has been serving the data center market for more than 10 years. All of our products are designed, engineered, built, and shipped under our own roof. We have product solutions available for every major OEM, but if one of our existing products doesn't fit your needs, our top-notch mechanical and electrical engineers can create the item you need from scratch, solving even the toughest installation design challenges. Best of all, we typically don't charge up-front fees for design services.

Products Sold:

Computer server racks, cabinets, shelves, and mounting products.

(888) 903-7225 | www.racksolutions.com

PHYSICAL INFRASTRUCTURE




Mainline Computer Products has been in business since 1986 and has one of the nation's largest selections of LAN furniture, command centers, and server cabinets. We can serve companies of all sizes, including educational institutions and city, state, and federal government agencies. In addition to offering data center equipment, we can assist in the planning, design, construction, and design/build process.

Products Sold:

- Command consoles
- Server cabinets
- Computer room equipment
- UPS and PDU systems
- Access flooring
- Technical furniture

(800) 686-5312 | www.mainlinecomputer.com

PHYSICAL INFRASTRUCTURE



PDU Cables is the leading supplier of power distribution cables assemblies to data centers in North America. PDU Cables has been serving this industry since 1981 and is the first independent cable assembly company to introduce colored conduit into the power distribution cable market, the first to get UL 478 listing, and the first to introduce the Power Cable and Equipment Configurator software tool. The company is centrally located in Minneapolis, Minn., allowing it to offer 24-hour turnaround and shipping time of just one or two days to almost any United States destination.

Products Sold:

A range of power cables, cable seals, and power cord assemblies.

(866) 631-4238 | www.pducables.com

PHYSICAL INFRASTRUCTURE



Cablesys, headquartered in La Mirada, California, is a leading manufacturer of high performance fiber cables, fiber jumpers, CAT 6 patch cords, CAT 5e patch cords, CAT 6 cables and connectivity solutions. We have millions in stock that can be shipped same day and best of all, 20% less than name brands.

Products Sold:	Custom Cable Assemblies:
• Fiber Optic Cables	• Pre-bundled Cable Assemblies
• Fiber Patch Cords	• Trunk Cable Assemblies
• Networking Patch Cords	• Multi-strand Cable Assemblies
• Telephone Line Cords	• Pre-labeled and Pre-kitting
• Audio and Video Cables	• OEM Cable Assemblies
• Mini Coax Cables	

(800) 555-7176 | Cablesys.com/pro

PHYSICAL INFRASTRUCTURE




AVTECH Software, founded in 1988, is focused on making the monitoring and management of systems, servers, networks, and data center environments easier. AVTECH provides powerful, easy-to-use software and hardware that saves organizations time and money while improving operational efficiency and preparedness. AVTECH products use advanced alerting technologies to communicate critical status information and can perform automatic corrective actions.

Products Sold:

A full range of products that monitor the IT and facilities environment, including temperature, humidity, power, flood, room entry, and UPS

(888) 220-6700 | www.AVTECH.com

PHYSICAL INFRASTRUCTURE



PDUsDirect.com is a Master Distributor of select Server Technology PDUs for server and networked environments. PDUs Direct's basic, metered, and switched Rack PDUs provide local and remote power management, power monitoring, and environmental monitoring. We pride ourselves in offering industrial-grade quality products at the lowest prices, with the fastest shipping (most orders shipped within 24 hours) and simplest purchase process. We are the Power Behind the Business.

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PHYSICAL INFRASTRUCTURE




BayTech was founded in 1976 and, since the 1990s, has developed unique products for remote power management. The company uses printed circuit board instead of wires for a better, more resilient connection between the data center equipment and the receptacle. BayTech provides an extensive Web site with brochure downloads, warranty information, and reseller support and also offers evaluation units for data centers.

Products Sold:

- Power control, distribution, management, and metering
- Power transfer switches
- Console management and remote site management

(800) 523-2702 | www.baytech.net

PHYSICAL INFRASTRUCTURE




CTI was founded by Methode Electronics in 1997 and during the past 13 years has provided data centers with innovative solutions. CTI has recently become the cornerstone of Methode's Data Solutions Group, joining forces with the Methode dataMate and OPTOKON divisions in supporting the data center and communication industries. In addition, our highly qualified professional services team can engineer and install the best solution to fit your needs.

Products Sold:

Fiber and copper cabling solutions; Smart DACs; cabinets, patch panels; asset tracking; biometric access control; optical test equipment; harsh environment network equipment

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PHYSICAL INFRASTRUCTURE



Since 1979, Simplex Isolation Systems has been setting new design standards in modular expandable cleanroom components, isolation curtains, hardware, and new product development. Fontana, Calif.,-based Simplex's unique strip doors and mounting systems are designed for quick installation. Simplex parts and materials perform with optimum efficiency, last longer, and save you money. And with Simplex, you are always backed by industry expertise, product knowledge, and the best warranties in the market.

Products Sold:

- Cleanrooms
- Strip doors
- Enclosures
- Curtains

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PHYSICAL INFRASTRUCTURE



Sensaphone has been designing and manufacturing remote monitoring systems for more than 25 years and has more than 300,000 of its products in use. Sensaphone's product lineup offers a full range of devices with a broad number of features and applications designed to monitor your entire infrastructure and alert you to changes. All product engineering functions, including hardware and software design and circuit board layout and assembly, are performed at the Sensaphone facility in Aston, Penn.

Products Sold:

Remote monitoring solutions that provide email and voice alarm notification for problems related to temperature, humidity, water detection, power failure, and more.

(877) 373-2700 | www.sensaphone.com

PHYSICAL INFRASTRUCTURE



Total Cable Solutions (TCS) provides a wide range of products from copper keystone jacks to custom bundled fiber cables. All products are manufactured with TCS's highest quality, in factories that are ISO-9001 and TUV Certified. All of our cable lines meet or exceed EIA/TIA RoHs standards.

Products Sold:

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PHYSICAL INFRASTRUCTURE



Founded in 1985, Raritan has become a leading provider of power and energy management, DCIM and KVM solutions. Our products are in use at more than 50,000 locations worldwide, including eBay, Cisco, Intel, NASA, and the United States Post Office, giving IT departments the tools they need to increase power management efficiency, better manage data center changes, improve data center productivity and enhance branch office operations.

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- Data Center Infrastructure Management
- KVM and Remote Access Management

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PHYSICAL INFRASTRUCTURE




Staco Energy was founded in 1937 and is one of the longest-lasting innovators of power products and services in the world. Our recent innovations have created the foundation for entry into the SMB data center marketplace through pioneered design and expertise. We are committed to providing you with the best tailored power solutions for your needs.

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- Bulk cable

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PHYSICAL INFRASTRUCTURE



Power Assure helps enterprises, government agencies, and managed service providers gain the insight, knowledge, and automated control necessary to improve data center capacity, service levels, and power usage. The company counts ABB, Dell, IBM, Raritan, and VMware as partners.

Products Sold:

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PHYSICAL INFRASTRUCTURE



LINDY USA specializes in cables, adapters, electronics and accessories for computer, networking and audio video applications. Since 1932 Lindy has supplied high quality interconnects to customers in commercial, telecom and residential markets. What sets us apart is our complete dedication to innovation, performance and reliability. Our cabling products are truly outstanding.

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EQUIPMENT DEALER



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